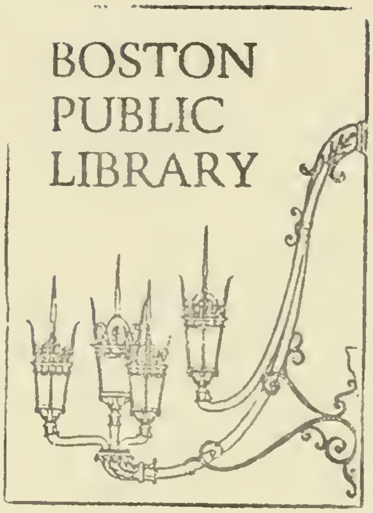

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ENVIRONMENTAL SITE EVALUATION
BRA PARCEL A
BOSTON, MASSACHUSETTS

PREPARED FOR:
Chinese Economic Development Corporation
Boston, Massachusetts

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PREPARED BY:
GZA GeoEnvironmental, Inc.
Newton Upper Falls, Massachusetts

August, 1991
File No. 12547

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August 2, 1991
File No. 12547-C, PC

Mr. Frank Chen
Chinese Economic Development Corporation
65 Harrison Avenue
Boston, Massachusetts 02111

Re: Preliminary Environmental Site Assessment
BRA Parcel A
Boston, Massachusetts

Dear Mr. Chen:

In accordance with our proposal dated December 13, 1990 GZA GeoEnvironmental, Inc. (GZA) has conducted a preliminary site evaluation of the BRA Parcel A in Boston, Massachusetts. This report was prepared in accordance with the Limitations in Section 8 and in Appendix A and Terms and Conditions in Appendix A.

This report describes the conditions observed by GZA at the study site. The text present the results of the site reconnaissance, site history research, regulatory agency file review, subsurface exploration program, and chemical screening and analyses of soil and groundwater samples from the site.

On the basis of the observations made and information reviewed during our assessment of the site, as described above, it is GZA's opinion that the available evidence indicates the presence of hazardous material and oil in the form of low to moderate levels of VOCs and PHCs in the soil and low levels of unknown compounds in the groundwater at the site. However, it is also our opinion that based on the available information the hazardous material and oil detected on the subject site does not pose n imminent threat to human health, safety or the environment.

We have appreciated the opportunity to work with you on this project.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Frank Grynkewicz
Senior Project Manager

James V. Errico
Associate Principal/Project Reviewer

Walter E. Jaworski
Senior Principal
JVE/FG/WEJ/dc

*** * * DRAFT * * ***

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1.00 INTRODUCTION

In accordance with our proposal dated May 16, 1991, GZA GeoEnvironmental, Inc. (GZA) has completed an environmental site evaluation of the BRA Parcel A site in Boston, Massachusetts. The purpose of this evaluation was to render an opinion on the presence of hazardous material or oil in soil and groundwater at the site, within the meaning of Massachusetts General Laws, Chapter 21E. The scope of services included:

- a site visit;
- a review of site history;
- contact with certain local and state officials, and review of certain state and federal files and lists regarding possible environmental concerns at or near the subject site;
- subsurface explorations, in the form of test borings and groundwater monitoring well installations;
- sampling of the groundwater monitoring wells;
- limited screening/analysis of the soil and groundwater samples at GZA's Newton Environmental Chemistry Laboratory; and
- the preparation of this report containing an opinion as to the presence of hazardous material or oil in the soil or groundwater at the site.

This report has been prepared in accordance with the Limitations and Statement of Terms and Conditions presented in Appendix A.

2.00 BACKGROUND

The following paragraphs describe the physical layout of the site, its hydrogeologic setting and the history of site use.

2.10 SITE DESCRIPTION

Parcel A consists of two lots located on either side of Pine Street in the Chinatown section of Boston; the main lot is approximately 34,434 square feet located south of Pine Street and the adjacent lot is 3594 square feet located on the north side of Pine Street. A Site Locus and Exploration Location Plan are attached as Figures 1 and 2, respectively. At the time of this study, both lots were used as parking areas. A detailed description of the site is presented in Section 4.00.

Parcel A is bounded on the west by Washington Street, across which is Josiah Quincy High School; on the north (and east of the smaller lot) by Parcel B, a grass-grown lot with an abandoned building; on the east by brick apartments and the Boston Chinese Evangelical Church; and on the south by Marginal Way and a below grade portion of the Massachusetts Turnpike (Mass Pike). Conrail railroad tracks leading into South Station and the Fort Point Channel are approximately one-half mile east of Parcel A, to the south of the Mass Pike/Southeast Expressway interchange.

2.20 TOPOGRAPHY AND DRAINAGE

According to the U.S. Geological Survey topographic quadrangle map of the area (Boston South Quadrangle, 1979), Parcel A is located one mile southwest of Boston Inner Harbor and one-third mile due west of the Fort Point Channel. The site is generally flat and slopes gently toward the east. Surficial runoff is collected from three catch basins aligned north-south near the eastern side of the site, and are believed to be connected to the drainage line under Pine Street. Based on a preliminary review of the area's topography and observations of the site, GZA anticipates that regional groundwater flow is generally to the northeast. However, localized flow directions in the vicinity of the site may vary as a result of underground utilities (e.g., storm drains, sewers, utility conduits) or heterogeneous subsurface conditions. In particular, the Massachusetts Turnpike drainage system may influence site groundwater flow.

Subsequent references to upgradient or downgradient directions in relation to the site are relative to GZA's anticipated northeasterly direction of groundwater flow.

2.30 SITE HISTORY

To obtain information regarding the history of the site, GZA contacted the Boston Redevelopment Authority (BRA), Boston Assessor's Office, Building Department, and Sanborn Mapping & Geographical Information Service.

Sanborn Maps of the site area provided the following information (see Appendix B): A 1867 map indicated that Parcel A was divided into a number of small properties, apparently commercial, including several carpentry shops and livery stables. The 1885 map indicates "Protective Department No. 2" at the southeast corner of the site and a carpentry shop where the present-day small (northeast) lot is located. The 1895 map indicates a painting shop on the northeast corner of Parcel A and a stained glass business in the southeast corner. As of 1909 there appear to have been dry goods stores and carpentry shops, with a blacksmith at the former "Protective Department" location. By 1929, the Rufus F. Dawes Hotel extended from the present-day Parcel B into the northeast corner lot of Parcel A; a Boston Edison substation was located just off-site, east of the southeast corner of Parcel A. The 1951 map shows the Dawes hotel still in place and the remainder of Parcel A still occupied by small businesses; the former Boston Edison substation was by then occupied by "Electric Motor Rep" Finally, the 1989 map shows the site as it is today, occupied by parking.

Additional historical information was difficult to obtain due to a lack of specific numbered street addresses for the site. Some historical maps indicate portions of the site to be addressed as 664 to 670 and 890 to 908 Washington Street, 1-13 Pine Street and 220 to 254 Marginal Street; we believe that these addresses are accurate relative to property lines delineated by BRA Parcel A. The Assessor's Office indicated that the Boston Redevelopment Authority (BRA) owned property in the area of the site at unspecified numbered addresses on Oak Place, Oak Street and Broadway. No information of past owners of the site was obtained from the Assessor's Office.

The Building Department files indicate that in 1921 a permit was issued for the address of 902 Washington Street to construct a building to house unspecified types of stores. A 1975 Building Department file for 902 and 908 Washington Street was issued to take down a building and fill the property to grade, and 1982 and 1983 permits granted permission for the site to be used as a parking lot.

3.00 REGULATORY INFORMATION CONCERNING SITE AND VICINITY

Certain state and local agencies were contacted and certain state and federal files and lists reviewed to assess whether hazardous materials may have been released into the soil or groundwater at or near the site. Some of the information was developed by telephone contact; other information is the result of direct interviews and visits. The information made available to GZA during these visits, interviews and file reviews is summarized in the following paragraphs. Again, note that referenced specific address locations may not be entirely within the limits described relative to the boundaries of BRA Parcel A.

3.10 LOCAL

To obtain information concerning the possible release of hazardous material or oil at or near the study site, GZA contacted the Boston Health, Fire and Water Departments and the Clerk's Office. Their records indicated no release of oil or hazardous material at the site. However, fire department personnel recalled a gasoline spill in approximately 1989 on Kneeland Street, which is approximately 300 feet to the north and crossgradient of the site.

The officials at the Fire Department indicated that no underground storage tanks (USTs) were indicated to be at the site. However, please note that GZA was unable to determine how the former site buildings were heated. It is possible that heating oil may have been used to heat the buildings and may have been stored in above or below ground storage tanks and not reported to the municipal Fire Department records. GZA observed no records of specific demolition activities of the site building; it is possible that possible storage tanks may have been left on the site during demolition.

The officials at the Water Department indicated the no public or private water wells are at or in the area of the site. In addition, the buildings in the area were indicated to receive their drinking water from the Massachusetts Water Resource Authority (MWRA).

The Health Department officials also indicated that their files indicated no information regarding the storage of hazardous materials or oil at the site.

3.20 STATE

Files made available to GZA at the Massachusetts Department of Environmental Protection (DEP) Northeast Regional Office were reviewed on May 31, 1991.

The DEP Incident Response Files, Miscellaneous Files, and Spills Database (in the Northeast Region) indicated that the following incidents involving hazardous materials and petroleum products have occurred within 1/8 mile of the site:

- Medical Veterinary Building, 136 Harrison Ave (presumed downgradient): December 4, 1987 spill of acids inside building, no floor drains affected; clean-up by Clean Harbors;
- 35 Kneeland Street (presumed downgradient): 90 gallons of No. 4 fuel oil released during tank test on June 19, 1987; clean-up by Clean Harbors; and

- Corner of Kneeland & Washington Streets (presumed downgradient of Parcel A): over 2000 gallons cable oil released September 19, 1989 when a contractor jackhammered into cable line; clean-up by Clean Harbors.

The DEP May 14, 1991 Site Assessment Database listed one site within 1/4 mile of Parcel A:

- New England Medical, parcel 1-C, 810-864 Washington Street (presumed crossgradient) listed as a confirmed Phase II, non-priority site.

Additional information in the DEP Sites Files indicated that soil samples from this property (which was previously an MBTA station) were found to have slightly elevated levels of total petroleum hydrocarbon in soils.

The DEP December 31, 1990 Spills Database listed nine spills within 1/8 mile of Parcel A:

- Atlas Oil, 100 Shawmut Ave: December 21, 1983 release of 10 gallons of No.4 fuel oil, cleanup by Pollution Control Unlimited (PCU);

- Exxon, Kneeland Street: February 10, 1984 release of 50 gallons of jet fuel, cleanup by PCU;

- Tufts, 136 Harrison Ave: November 3, 1984 release of one gallon toluene, cleanup by Keating; also December 4, 1987 release of one liter of acids, cleanup by Clean Harbors;

- New England Medical Center, 35 Kneeland Street: June 19, 1987 release of 90 gallons of No.4 fuel oil, cleanup by Clean Harbors;

- Belco, unlisted number on Shawmut Ave: August 4, 1987 release of unknown quantity transformer oil, no cleanup contractor listed;

- Boston University, Harrison Ave: December 14, 1987 release of unknown quantity of unknown chemicals, cleanup by Advanced Em. Tech. Co;

- Belco, corner of Tremont & Kneeland Streets: September 19, 1989 release of 1000 gallons of cable oil, cleanup by Clean Harbors; also October 31, 1989 release of unknown quantity of cable oil, clean-up by Clean Harbors;

- unidentified location on Kneeland Street: September 23, 1989 release of unidentified quantity of gasoline, cleanup by Fire Department/DPW; and

- Munson Transport, unlisted number on Kneeland Street: July 10, 1990 release of unknown quantity of diesel fuel, no cleanup contractor listed.

GZA reviewed the April 11, 1991 DEP "Lists of Confirmed Disposal Sites and Locations To Be Investigated", which indicated that the site addresses of 890 to 908 Washington Street was not listed; however, several nearby addresses were listed. Pertinent sections of the master index of the DEP list are attached in Appendix C.

GZA also reviewed the DEP Water Supply Protection Atlas, which did not indicated the presence of the following potential sources of environmental contamination within 1/4 mile of Parcel A: landfills, salt storage sites, surface impoundments, junkyards, or hazardous waste sites. The Atlas additionally indicated no public water supply wells or reservoirs within 1/4 mile of the site.

3.30 FEDERAL

GZA's review of the EPA Resource Conservation and Recovery Act (RCRA) list of hazardous waste generators, transporters and treatment/storage/disposal facilities registered under the RCRA identified nine such companies within 1/4 mile of Parcel A; of these, seven were listed as small quantity generators and two (New England Medical Center and Tufts University Medical School) were listed as large quantity generators. The hazardous waste generators in the vicinity of the subject site are listed in Table 1.

The EPA March 1, 1991 Facility Index System (FINDS) list of companies involved with any of 12 EPA monitoring programs indicated nine such companies within 1/8 mile of Parcel A; these companies are also listed on Table 1.

The February 26, 1991 Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) list of sites for possible investigation under the Federal Superfund program indicated no listings within 1/8 mile of Parcel A. The National Priority List did not indicate properties within 1/4 mile of the subject site.

Additionally, the 1981 and 1986-1990 EPA lists of companies with National Pollutant Discharge Elimination System (NPDES) permits were reviewed. They showed no companies in the vicinity of the site with NPDES permits.

EPA's Emergency Response Notification System (ERNS) list dated February 22, 1991 of spills reported to the EPA did not indicate any spills reported at or within 1/8 mile of Parcel A. EPA's February 25, 1991 National Priority List of sites in Massachusetts did not include any sites in Boston.

4.00 SITE RECONNAISSANCE

On May 21, 1991, GZA Geologist Amy Sheridan visited the site to observe surficial conditions for evidence of the presence of hazardous materials or oil. Parcel A consists of two lots: the primary lot occupies most of the block south of Pine Street, and the smaller lot is a small segment of the block north of Pine Street. No buildings are on the site.

At the time of the visit, the primary lot consisted of a paved parking lot surrounded by a chainlink fence. The parking lot is operated by New England Medical Center and was filled with cars at the time of the visit. Three catch basins believed to be connected to the drainage line beneath Pine Street were observed near the east side of the site. A few small, isolated, oil-like stains commonly observed on paved parking lots were observed.

The smaller lot consisted of the southeast corner of an unpaved gravel parking area adjacent to 16 Pine Street. The lot was also surrounded by chainlink fence. According to the parking attendant at the larger lot, this smaller lot was used by employees of Quincy School. No surficial stains were observed on the gravel surface of the lot. Photographs of the site are presented in the Figure section of this report.

5.00 FIELD EXPLORATION, SAMPLING AND ANALYTICAL PROGRAM

GZA completed a field exploration program as part of the present evaluation to assess the presence of oil or hazardous materials in soil and groundwater at the site. This program consisted of the execution of 8 borings, the installation of 5 monitoring wells, and the collection and screening analysis of soil and water samples.

To the extent feasible, exploration locations were selected to obtain soil and groundwater samples from generally upgradient and downgradient areas of the site. An Exploration Location Plan is attached as Figure 2.

5.10 SUBSURFACE EXPLORATIONS AND MONITORING WELL INSTALLATIONS

On June 19 through June 28, 1991, 8 borings were completed by GZA Drilling, Inc. of Brockton, Massachusetts. Hollow stem auger techniques were employed without the use of drilling water or other fluids for shallow borings; the deep borings were

advanced using drive and wash methods through overburden and a diamond bit with NX core in bedrock.

A monitoring well consisting of 10 feet of 1.5-inch-diameter PVC wellscreen attached to solid PVC riser pipe was installed in five of the borings. All PVC attachments were completed without the use of solvents or glues to prevent contamination. The wellscreen was set to span the water table encountered in the boring during drilling. A filter of clean silica sand was placed in the annular space around the wellscreen, and a bentonite clay seal was placed above this filter sand. Each well was completed with a curb box. Well installation details are presented on the boring logs in Appendix D.

5.20 SOIL AND WATER SAMPLING

Split spoon soil samples were obtained by Standard Penetration Tests at 5-foot intervals during the drilling operations. Soil samples were classified by the on-site geologist; boring logs developed by GZA are attached as Appendix D. A portion of each soil sample was collected in a clean glass jar, stored in an ice-packed cooler and transported to GZA's Environmental Chemistry Laboratory (ECL) for chemical screening.

On July 7, 1991, GZA personnel sampled the five monitoring wells at the study site. Groundwater samples were obtained using 5-foot stainless steel bailers with Teflon ballcheck valves. A separate laboratory-cleaned bailer was used for each well to avoid cross-contamination. Three times the initial standing volume of the groundwater in the well was evacuated to remove stagnant water, and the well was allowed to recharge. Drilling water used during the drive and wash methods employed in deep borings was removed by extra bailing of wells. Water samples were collected in hydrochloric acid preserved 40-ml vials with Teflon septa, one liter amber glass jars, and in clean 8-ounce glass jars. The samples were kept cooled until their delivery to GZA's ECL.

GZA measured water levels in each monitoring well with an electronic water level reader at the time of sampling. The depths to water table are indicated on the well logs in Appendix D.

5.30 CHEMICAL SCREENING OF SOIL AND WATER SAMPLES

Soil samples collected from the site were screened in GZA's laboratory for total volatile organic compounds (VOCs) using an H-Nu Model PI-101 photoionization detector (PID) with a 10.2 electron volt lamp. The PID measures relative levels of VOCs referenced to a benzene in air standard. Although the PID screening cannot be directly used to quantify VOC concentrations or identify individual compounds, the

results can serve as a relative indicator of the levels of VOCs in each sample. Laboratory PID screening results are presented on the boring logs in Appendix D, and summarized in Table 2. A discussion of the results of the screening analyses is provided in Section 6.21.

Based on PID screening results, additional chemical screening by static headspace gas chromatograph (GC) techniques was performed on selected soil samples using a Hewlett Packard Model 5890A GC. The GC screening analysis permits the tentative identification and approximate quantification of individual VOCs. GC screening results and a description of GZA's GC screening procedures for soil are included in Appendix E; results are discussed in Section 6.21, and presented in Table 3.

Groundwater samples were also screened for VOCs using the GC and static headspace techniques. The GC screening procedures and results are presented in Appendix F; results are discussed in Section 6.22, and presented in Table 4.

In addition, water samples were screened for pH and specific conductance within 24 hours of collection. The pH is a measure of the acid or basic nature of water, and specific conductance is a measure of dissolved ions in water. An Orion Research Model EA 940 Expandable Ionalyzer was used to measure pH, and an YSI Model 34 Conductance-Resistance Meter was used to measure specific conductivity. Results are presented in Table 4 and discussed in Section 6.22.

Selected soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH) by infrared (IR) spectroscopy. TPH measures total petroleum hydrocarbon content. The IR procedures and results are included in Appendix G and results are discussed in Section 6.21 and 6.22, and presented in Table 3 and 4.

6.00 FIELD EXPLORATION AND ANALYTICAL RESULTS

The field exploration program consisted of the completion of 8 borings and the installation of 5 groundwater monitoring wells. The analytical program consisted of screening/analyses of soil and water samples. The following sections summarize the soil conditions encountered as well as the results of chemical screening of soil and water.

6.10 SUBSURFACE CONDITIONS

Soil conditions are summarized from the boring logs attached as Appendix D. Each of the borings encountered between 8.5 and 13.5 feet of granular fill overlying 4 to

20 feet of silt and clay, overlying 9.5 to 60 feet of silty clay. Borings GZA-2 and GZA-4 were advanced approximately 10 to 15 feet into bedrock and revealed between approximately 19.5 to 60 feet of gray silty clay overlying 4 to 12 feet of glacial till, overlying argillite bedrock. Boring GZA-3 was advanced to refusal and did not encounter glacial till. The depth to bedrock was between approximately 75 feet (GZA-4) and 90 feet (GZA-2) below existing grade.

6.20 RESULTS OF CHEMICAL SCREENING ANALYSES

A total of 76 soil samples and 25 groundwater samples were returned to GZA's Environmental Chemistry Laboratory in Newton, Massachusetts for chemical screening. Screening results are presented in Tables 2, 3 and 4 and contained in Appendices E, F, and G. Results are summarized below.

6.21 Soil

GZA Laboratory PID readings detected elevated VOCs in 11 of the samples screened. The VOCs were generally observed within the fill material or slightly below and ranged between 0.6 and 8.2 ppm. GZA-2,S-13 taken from a depth of 80 to 82 feet which detected 0.1 ppm VOCs.

Based on the PID readings, eleven soil samples were selected for GC Screening. The results indicated none detected for all the samples except: GZA-4,S-1 and S-2; GZA-5,S-3; and GZA-8,S-1. Trace levels of variously eluting compounds were detected in GZA-5,S-3 and GZA-8,S-1. The chromatogram pattern for samples GZA-4,S-1 and S-2 indicated the presence of trace levels of petroleum distillates such as gasoline/fuel oil (toluene, ethyl-benzene, and xylenes).

Based on the GC screening results, 10 samples were submitted for TPH-IR analyses. The results indicated TPH levels between 18 ppm and 97 ppm for all the samples except GZA-2,S-2 and S-3, GZA-4,S-1 and S-2 which ranged between 1,000 ppm and 5,400 ppm.

6.22 Groundwater

The pH of the groundwater was generally slightly basic and within the normal range for groundwater in New England (6.6 to 8.8). The conductivity ranged between 596 and 5,540 which is generally high for groundwater. However, based on the urban setting and the origin of most of the sediments are from marine deposits, the high conductivities may be due to residual sodium-chloride (salt) trapped within the sediments.

The GC screening results for VOCs did not detect VOCs in the five groundwater samples; however, trace to low levels of five intermediate and late eluting compounds were detected in sample G2-4..

Based on the VOC screening results a duplicate sample from GZA-4 was analyzed for TPH compounds. The results revealed that no PHCs were detected.

7.00 SUMMARY AND CONCLUSIONS

An environmental site evaluation was conducted at the Parcel A site in Boston, Massachusetts. The study included a site reconnaissance, a review of site history, a review of available local, state and federal regulatory records, a limited field exploration program, and chemical screening of water and soil samples from the site.

1. Between 1867 and the middle 1980s the site contained several small two and three story brick buildings which contained small business such as carpentry shops, a livery stable, a hotel; a stained glass shop, a blacksmith shop, and substation were located near the site. The site is currently used as a paved parking lot.

2. Local and state records indicated no incidents involving oils or hazardous materials have occurred at the site. State records indicated nine surface releases of oil or hazardous materials occurred within 1/8 mile of the site between 1983 and the present; federal records indicated seven companies as small quantity generators and two companies as large quantity generators within 1/4 mile of the site, no locations near the site are listed under CERCLIS.

3. A site reconnaissance indicated no surficial evidence of a release of oil or hazardous materials except for small, isolated, apparently surficial oil-like stains typically associated with automobile parking lots.

4. Subsurface conditions within the upper 8.5 to 13.5 feet of overburden consisted primarily of granular fill materials such as gravel, sand, brick, reinforced concrete, and asphalt, overlying silt and clay, silty clay, glacial till and bedrock.

5. Low levels of VOCs were detected in some soil samples, generally in the upper 20 feet. Some unknown compounds were detected in four soil samples; the most number of unknown compounds were detected in G2-4.

6. Chemical screening of soil samples indicated the presence of petroleum hydrocarbons (PHCs) at levels of 18 to 1,600 ppm with two samples with detected with levels of 2,900 and 5,400 ppm. The most elevated levels generally occurred within the upper 5 to 10 feet of fill material.

7. Results of the GC screening indicate that no identified VOCs were detected in the five groundwater samples; however, trace to low levels of intermediate and late eluting unknown compounds were detected in one groundwater sample. Follow up PHC-IR screening of this one sample detected no PHCs.

On the basis of the observations made and information reviewed during our assessment of the site, as described above, it is GZA's opinion that the available evidence indicates the presence of hazardous material and oil in the form of low to moderate levels of VOCs and PHCs in the soil and low levels of unknown compounds in the groundwater at the site. However, based on the available information it is also our opinion that the hazardous material and oil detected on the subject site does not pose an imminent threat to human health, safety or the environment.

If construction activities are commenced at the site, the detected contaminates should be considered in the development of a health and safety plan.

Finally, it should be noted that MGL Chapter 21E requires the owner or operator of a site to notify DEP of a release or threat of release of oil or hazardous material to the environment. GZA recommends that you consult appropriate legal counsel regarding the legal implications of the findings presented in this report.

8.00 LIMITATIONS

GZA's site evaluation was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and GZA observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GZA's findings and conclusions must be considered not as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the environmental site evaluation. No other warranty, express or implied, is made. Specifically, GZA does not and cannot represent that the site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its site evaluation. This report is also subject to the specific limitations contained in Appendix A.

This study and report have been prepared on behalf of and for the exclusive use of CEDC, solely for use in an environmental evaluation of the site. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without the prior written consent of GZA. However, GZA acknowledges and agrees that the report may be conveyed to the Owner and potential Lenders associated with the proximate development of the site by our Client, to the extent set forth in our May 16, 1991.

GZA

TABLES

TABLE 1

RCRA GENERATORS IN VICINITY OF THE STUDY SITE[1]

BRA PARCEL A

Facility ID	Facility Name & Facility Contact	Facility Address	Activity Type GEN TRA TSD B/B[2]	Notification Date
MAD043410984	Beckler Press Inc.	375 Broadway	2	08/01/80
MAD001043421	Boston Herald Campbell Raymond	1 Herald Square	2	11/08/83
MAD076584804	Commonwealth Cleaners	192 Harvard St.	2	11/20/86
MAD079532263	New England Medical Center Loranger Michele	750 Washington St.	1	7/24/81
MAD980909709	New England Telephone Co. Motor Vehicle Dept.	170 Shawmut Ave.	2	4/18/86
MAD001017094	Rapid Service Press Inc.	375 Broadway	2	08/01/80
MAD019251149	Sasco Corp Meredith I Genl Mgr.	790 Washington St.	2	07/23/86
MAD099198178	Tufts University Medical School Irving-Deady Karen	136 Harrison Ave.	1	12/03/80
MAD980668263	US Dept Argiculture Human Nutr Res Lapham Lawrence Engineer	711 Washington St.	2	04/08/83

Note:

1. This list was developed from a review of the EPA list of hazardous waste generators, transporters, and treatment/storage/disposal facilities registered under the Resource Conservation and Recovery Act (RCRA).

2. 1 - large quantity generator; 2 = small quantity generator.

TABLE 2

PHOTOIONIZATION DETECTOR RESULTS
(Volatile Organic Compound Screening/ppm)

BRA - Parcel A

	Boring Location							
Sample No.	GZA-1	GZA-2	GZA-3	GZA-4	GZA-5	GZA-6	GZA-7	GZA-8
S-1	ND	ND	ND	3.7	Neg.	Neg.	ND	1.8
S-2	ND	0.7	ND	6.0	Neg.	Neg.	0.6	ND
S-3	ND	0.9	ND	Neg.	8.2	Neg.	0.6	ND
S-4	ND	ND	ND	Neg.	Neg.	Neg.	ND	ND
S-4A	--	--	--	--	--	--	--	ND
S-5	ND	2.8	ND	Neg.	Neg.	Neg.	0.8	ND
S-6	ND	ND	Neg.	Neg.	Neg.	Neg.	ND	ND
S-7	ND	ND	Neg.	Neg.	Neg.	ND	ND	ND
S-8	--	ND	Neg.	Neg.	--	--	--	--
S-9	--	ND	Neg.	Neg.	--	--	--	--
S-9A	--	--	--	Neg.	--	--	--	--
S-10	--	ND	--	Neg.	--	--	--	--
S-11	--	ND	--	Neg.	--	--	--	--
S-12	--	ND	--	Neg.	--	--	--	--
S-13	--	0.1	--	Neg.	--	--	--	--
S-14	--	--	--	Neg.	--	--	--	--
S-15	--	--	--	Neg.	--	--	--	--
S-16	--	ND	--	Neg.	--	--	--	--

Notes:

1. ND denotes non-detected; -- denotes no sample taken or no recovery for the sample number at that boring location.

2. Results are in parts per million and represent total organic vapor levels referenced to a benzene standard. Results obtained by laboratory analysis of the headspace soil sample jars using an H-Nu PI-101 photoionization detector (PID).

TABLE 3

SUMMARY OF CHEMICAL ANALYSES-SOIL

BRA - PARCEL A

Sample No.	Total VOCs/Unknown ppb	TPH-IR ppm
Date Sampled: 6-19-91		
GZA-2, S-2	ND	1000
GZA-2, S-3	ND	2900
GZA-2, S-5	ND	69
GZA-2, S-13	ND	72
Date Sampled: 6-13-91		
GZA-4, S-1	Trace (17)	5400
GZA-4, S-2	Trace (10)	1600
Date Sampled: 6-7-91		
GZA-5, S-3	ND (3)	18
Date Sampled: 6-14-91		
GZA-7, S-2	ND	97
GZA-7, S-3	ND	85
GZA-7, S-5	ND	25
Date Sampled: 6-5-91		
GZA-8, S-1	ND (7)	77

Notes:

1. Volatile organic compounds (VOCs) screened in soil using a Hewlett Packard 5890A gas chromatograph. Refer to Appendix E for soil screening procedures and laboratory data sheets. ND indicates none detected. Number of unknown compounds are indicated in parentheses, and indicates volatile organic compounds for which GZA's laboratory has no internal standards for identification.

2. Results of GC screening for VOCs represents total concentrations detected. Compounds detected were MTBE for GZA-4, S-1 and toluene, ethyl benzene, and xylenes (TEX) for GZA-4, S-2. Refer to laboratory data sheets in Appendix E for concentrations of individual compounds.

3. The Total Petroleum Hydrocarbon, Infrared Spectrophotometry (TPH-IR) analyses were conducted according to EPA Method 418.1 for quantification of petroleum hydrocarbons in aqueous or solid samples.

TABLE 4

SUMMARY OF CHEMICAL ANALYSES - GROUNDWATER

BRA - PARCEL A

Sample No.	Total VOCs[1,2] (unknowns) ppb	pH[5]	Conductivity[6] (μmhos/cm)	TPH-IR7
GZA-1	ND[3]	8.80	596	--
GZA-4	ND[4]	7.90	5540	--
GZA-5	ND(5)[4]	6.62	2780	ND
GZA-6	ND	7.07	1060	--
GZA-8	ND[4]	7.07	3070	--

Notes:

1. Volatile organic compounds (VOCs) screened in using a Hewlett Packard 5890A gas chromatograph. Refer to Appendix F for water screening procedures. Number of unknown compounds are indicated in parentheses. "Unknowns" indicates volatile organic compounds for which GZA's laboratory has no internal standards for identification and quantification. Refer to Appendix F for laboratory data sheets.

2. Results of GC screening for VOCs represent total concentrations detected. Methane level of 19 ppm was detected in GZA-1.

3. ND denotes none detected; -- denotes sample not analyzed.

4. Methane was detected in sample GZA-4 (12,000 ppm), GZA-5 (7,100) and GZA-8 (11,000).

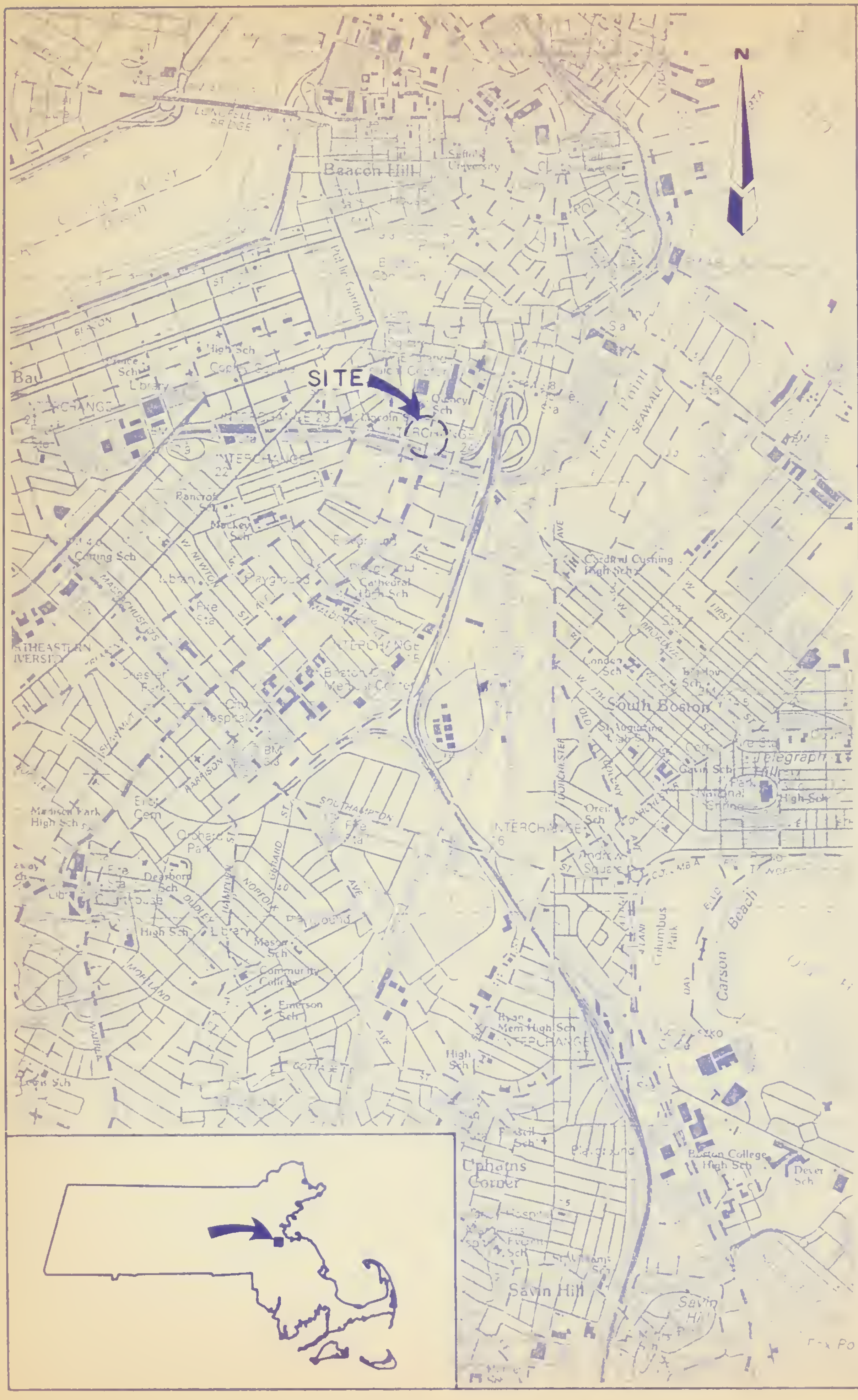
5. pH readings obtained by using an Orion Model EA 940 expandable ionanalyzer pH meter.

6. Specific Conductance (conductivity) measurements were made by using a YSI Model 34 Conductance - resistance meter.

7. The Total Petroleum Hydrocarbon, Infrared Spectriphotometry (TPH-IR) analyses were conducted according to EPA Method 418.1 for quantification of petroleum hydrocarbons in aqueous or solid samples.

GZA

FIGURES



DESIGNED BY: R P
CHECKED BY: R P
REVIEWED BY: F G

DRAWN BY: NBF
SCALE: 1: 25000
DATE: JULY, 1991

GZA
GeoEnvironmental, Inc.

GRAPHIC SCALE

0' 1000' 2000' 4000'

SOURCE: U.S.G.S. BOSTON S., MASS
QUADRANGLE MAP 1984

CHINESE ECONOMIC
DEVELOPMENT CORPORATION PARCEL–A
CHINATOWN/BOSTON, MASS

LOCUS PLAN

PROJECT NO.
12547

FIGURE No.
1

Figure 2 missing

PHOTOGRAPHS

* * * DRAFT * * *

APPENDIX A

LIMITATIONS/STATEMENT OF TERMS AND CONDITIONS

STATEMENT OF TERMS AND CONDITIONS OF ENGAGEMENT

The terms and conditions set forth herein are incorporated, by reference, in the Proposal for Services, dated ______________________________, File Number ______________________,

directed to ____

(the "Client").

This Proposal contains clauses that limit Company's liability to Client and require Client to indemnify Company for some claims for damages. The Proposal should be reviewed carefully, and Client may choose to consult with an attorney.

GZA GeoEnvironmental, Inc. ("Company") and Client agree as follows:

Section 1. Services. Company shall provide Client with the "Services" set forth in the Proposal for Services ("Proposal") with respect to the property identified in the Proposal (the "Site"), under the terms and conditions set forth herein. Company's Services will be performed on behalf of and solely for the exclusive use of Client for the purposes set forth in the Proposal and for no other purpose. Client acknowledges that Company's Services require decisions which are based upon judgment stemming from limited data rather than upon scientific certainties. Client, in accepting Company's Proposal, acknowledges the inherent risks to Client and its property associated with the work described in the Proposal and with underground work in general. Company reserves the right to refuse to undertake services on behalf of any project or on behalf of any prospective Client. Client acknowledges that other qualified persons and entities are available to carry out the proposed Services.

Section 2. Billing and Payment. Client will pay Company for services performed in accordance with the rates and charges set forth in the Proposal. Invoices for Company's services will be submitted on a periodic basis, or upon completion of Services, as Company shall elect. All invoices will be paid by Client within thirty (30) days after invoice date. Invoice balances remaining unpaid for thirty (30) days after invoice date will bear interest from invoice date at 1.5 percent per month or at the maximum lawful interest rate, if such lawful rate is less than 1.5 percent per month. If Client fails to pay any invoice in full within thirty (30) days after invoice date, Company may, at any time, and without waiving any other rights or claims against Client and without thereby incurring any liability to Client, elect to terminate performance of Services upon ten (10) days prior written notice by Company to Client. Notwithstanding any termination of Services by Company for non-payment of invoices, Client shall pay Company in full for all Services rendered by Company to the date of termination of Services plus all interest, termination costs and expenses incurred by Company and related to such termination. Client shall be liable to reimburse Company for all

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costs and expenses of collection, including reasonable attorneys' fees. Company's non-exercise of any rights or remedies, whether specified herein or otherwise provided by law, shall not be deemed a waiver of any such rights or remedies, nor preclude Company from the exercise of such rights or other rights and remedies under this instrument, or at law.

Section 3. Insurance. Company maintains Workers Compensation Insurance with respect to its employees with statutorily required limits. Company maintains public liability and property damage insurance policies. Certificates of Insurance evidencing such coverage will be provided to Client upon written request.

Section 4. Right of Entry. Client grants to Company the right, exercisable from time to time, of entry to the Site by Company, its agents, employees, consultants, contractors and subcontractors, for the purpose of performing all acts, studies and research, including the making of test borings and other explorations as described in the Proposal. Should Client not own the Site, Client warrants and represents by acceptance of the Proposal that it has authority and permission of Site Owner and any Site occupant to grant Company this right of entry. Company may require evidence of such authority in a form reasonably satisfactory to Company.

Section 5. Subsurface Explorations.

(a) **Normal Disturbance** - Client acknowledges that the use of exploration equipment may affect, alter or damage the terrain, vegetation and buildings, structures, improvements and equipment at, in or upon the Site. Client accepts such risks. Company will not be liable for any effect, alteration or damage arising out of such explorations except that caused by Company's negligent acts. The cost of restoration of the Site because of any such damage has not been calculated nor included in Company's fees.

(b) **Subterranean Structures** - Company will exercise a reasonable degree of care in seeking to locate subterranean structures in the vicinity of proposed subsurface explorations at the Site. Company will contact public utilities and review plans, if any, provided by public utilities and public agencies and plans and information about the Site provided by Client. So long as Company observes such standard of care, Company will not be responsible for any damage, injury or interference with any subterranean structure, pipe, tank, cable or any other element or condition if not called to Company's attention prior to commencement of work or which is not shown, or accurately located, on any plans furnished to Company by Client or by any other party, (public or private).

Section 6. Samples

(a) **General** - Company will dispose of all soil, rock, water and other samples thirty (30) days after submission of Company's initial report. Client may request, in writing, that any such samples be retained beyond such date, and in such case Company will ship such samples to the location designated by Client, at Client's expense. Company may upon written request arrange for storage of samples at one of Company's offices, at mutually agreed storage charges. Company will not give Client prior notice of intention to dispose of samples.

(b) Disposal of Hazardous Samples - If samples collected from the Site contain substances defined as "hazardous" by Federal, state or local statutes, regulations, codes, or ordinances, Company shall the have the right to: 1) dispose of samples by contract with a qualified waste disposal contractor; or 2) in accordance with Client's written directions, ship such samples by an appropriately licensed transporter to a licensed disposal site. Client shall pay all costs and expenses associated with the collection, storage, transport and disposal of samples. If Client requests, in writing, that any such sample be retained for a period in excess of thirty (30) days, Company will store such samples at Client's expense, and Client will pay an additional fee as charged by Company in accordance with its standard laboratory schedule for storage of samples of a hazardous nature.

Section 7. Construction Observation Services; Duties.

(a) General - Company, upon Client's written request, will provide personnel to observe and report to Client on specific aspects or phases of Client's project construction. Company's observation Services do not include any supervision or direction of work of any contractor or subcontractor, or their respective employees, agents or servants. Client shall notify each contractor and subcontractor that Company's observation Services do not include supervision or direction of the work and that neither the presence of Company's field representative nor the Services of observation and testing by Company, shall excuse the contractor or any subcontractor from the obligation to correct any defects then or thereafter discovered in the respective contractor's or subcontractor's work. Company will not be responsible for any contractor's or subcontractor's compliance with the provisions of any contract nor for the observation or supervision of any contractor's or subcontractor's use of personnel, machinery, equipment, safety precautions or procedures.

(b) Construction Site Safety - Company, by entering into an agreement with Client or by performing construction observation services, does not undertake any liability or responsibility for the development, supervision, or enforcement of any job or site safety requirements; nor for any failure of any contractor, subcontractor, or other third person or entity present on the Site to comply with the Occupational Safety and Health Act (Federal OSHA), or with any regulations or standards promulgated thereunder, or with any state, county, or municipal law, regulation, or ordinance of similar import or intent.

Section 8. Documents. All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates and other documents, data or information prepared by Company as instruments of Service, shall remain the sole property of Company. All reports and other work prepared by Company for Client shall be utilized solely for the intended purposes and Site described in the Proposal. Company will retain all pertinent documents for a period of three (3) years following the submission of Company's report to Client. Such documents will be available to Client upon request at Company's office during office hours on reasonable notice, and copies will be furnished by Company to Client for the total cost of reproduction of the same.

Section 9. Client's Duty to Notify Company of Hazards. Client represents and warrants that it will provide Company with any and all information known to or suspected by Client with respect to 1) the existence or possible existence at, on or under the Site of any hazardous materials, pollutants or asbestos as defined in the Federal Water Pollution Control Act; the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980; the Resource Conservation and Recovery Act of 1976, or under the provisions of federal, state, and local laws of similar import now or hereafter existing, 2) any condition known to Client to exist in, on, under or in the vicinity of the Site which might present a potential safety hazard or danger to human health or the environment, or 3) any permit, manifest, title record, or other record of compliance or non-compliance with any federal, state, or local laws relating in any way, directly or indirectly, to the past or present environmental conditions at the site.

Section 10. Hazardous Materials; Pollutants; Asbestos. If unanticipated potentially hazardous materials, pollutants or asbestos are encountered during the course of the work, Company shall have the right 1) to suspend its work immediately and 2) to terminate the work described in the Proposal, upon ten (10) days of Company's written notice of intent to terminate, unless Company and Client agree upon a mutually satisfactory amendment to the Proposal that may include a revision of the scope of services, adjustment of budget estimates, revised Terms and Conditions and revised fees. Client shall remain liable for and shall pay all fees and charges incurred under the provisions of the Proposal through the date of termination, notwithstanding Client and Company not having reached a new, mutually satisfactory, revision of their agreement.

Section 11. Confidentiality. Company will not disclose information regarding the Proposal, Company's Services or its Report, except 1) to Client, 2) parties designated by Client, or 3) as provided in Section 12 below. Information which is in the public domain or which is provided to the Company by third parties is excepted from the foregoing undertaking.

Section 12. Public Responsibility. Client acknowledges that the Client or the Site owner, as the case may be, is now and shall remain in control of the Site for all purposes at all times. Company does not undertake to report to any Federal, state, county or local public agencies having jurisdiction over the subject matter any conditions existing at the Site from time to time which may present a potential danger to public health, safety or the environment. Client, by acceptance of the Proposal, agrees that Client will timely notify each appropriate Federal, state, county and local public agency, as required by law, of the existence of any condition at the Site which may present a potential danger to public health, safety or the environment.

Notwithstanding the provisions of Section 11 and the foregoing, Company will comply with judicial orders or governmental directives, and federal, state, county and local laws, regulations and ordinances, and applicable codes regarding the reporting to the appropriate public agencies of findings with respect to potential dangers to public health, safety or the environment. Company shall have no liability or responsibility to Client or to any other person or entity for reports or disclosures made in accordance with such statutory or other lawful requirements. Client shall defend, indemnify and hold Company harmless from and against any and all claims, demands, liabilities and expense, including reasonable attorneys' fees, incurred by Company and arising directly or indirectly in connection with Company's reporting or disclosing such information under a bona fide belief or upon advice of counsel that such reporting or disclosure is required by law.

Section 13. Governing Law; Severability; Modifications; Assignment. Company maintains offices in several states. The agreement between Company and Client as set forth in the Proposal and in these Terms and Conditions shall be governed by and enforceable in accordance with the law of the jurisdiction in which Company's specific office issuing the Proposal is located. Such location shall be deemed the place of contracting.

The provisions of these Terms and Conditions are severable. The invalidity of any part of these Terms and Conditions shall not invalidate the remainder of these Terms and Conditions nor the remainder of any portion hereof.

These printed terms and conditions cannot be modified orally or by any course of conduct. Any modification must be acknowledged in writing by Company. These conditions shall take precedence over any inconsistent or contradictory provisions contained in any proposal, contract, purchase order, requisition, notice to proceed, or like document issued by Client. Client shall not assign any aspect of the agreement between Client and Company except upon the prior written consent of Company.

Section 14. Third Party Indemnity. Client agrees that Company has neither created nor contributed to the creation of any hazardous materials, pollutants, asbestos, or other potentially dangerous substance that is now or may be in the future discovered or introduced at the Site. Company hereby states, and Client acknowledges by acceptance of the Proposal, that Company may not have any professional liability or other coverage insuring Company for acts, errors and omissions, and Company may be unable to obtain such insurance at reasonable cost, for claims arising out of the performance of services, including but not limited to, investigation, assessment or evaluation of hazardous materials or pollutants or the detection, abatement, removal or replacement of products, materials or processes containing asbestos.

Client agrees to defend, indemnify and hold harmless Company, its subcontractors, consultants, agents, officers, directors, and employees harmless from and against any and all claims for damages and all costs, liability or expense, whether direct, indirect, economic, or consequential, including reasonable attorneys' fees, and court and arbitration costs, sustained or alleged by any person or entity other than Client, based upon or arising in connection with: 1) a release of hazardous materials or pollutants; 2) bodily injury including death and property damage (real or personal) or any other claim of damage, expense or loss, caused by the release, removal, remediation, assessment, evaluation or investigation of hazardous materials or pollutants; 3) removal, assessment, evaluation or investigation of, or remedial action taken because of, the release or suspected release of hazardous materials or pollutants; 4) any federal, state, local or other governmental fines or penalties related to hazardous materials or pollutants; or 5) the detection, abatement, removal, or replacement of products, materials, or processes containing asbestos.

Section 15. Limitation of Professional Liability.

(a) **General -** Client agrees that Company's liability to Client based upon or arising out of Company's alleged breach of contract or negligent professional acts, errors or omissions is limited, in amount, to the aggregate sum of $50,000 or Company's aggregate fee for services rendered on the subject project, whichever amount is greater.

(b) **Construction Projects -** Client agrees that Company's liability to Client and to any and all construction contractors and subcontractors for the project based upon claims arising as a result of Company's alleged breach of contract or negligent professional acts, errors or omissions is limited to the aggregate sum of $50,000 or Company's aggregate fee for services rendered on the subject project, whichever is greater.

(c) **Increased Limit of Professional Liability -** Company, upon Client's written request, agrees to increase the limit of Company's liability for breach of contract or negligent professional acts, errors or omissions in consideration of additional payment by Client or other consideration deemed appropriate by Company at the time. The request for increased limit of professional liability must be made to Company in writing at the time of Client's acceptance of the Proposal.

Client may indicate a requested limit of liability by initialing and dating in the appropriate spaces below.

Limit of Liability	Additional Fee	Initials	Date
$50,000	none	_____	___________
$75,000	$1,000	_____	___________
$100,000	$2,000	_____	___________

Any additional fee is due at the time of Client's request, and the increased limit of liability will become effective upon payment of the fee and execution of the Proposal. Additional monetary or other consideration given by Client for the additional economic risk assumed by Company shall not be construed as a charge for the placement or provision of additional professional liability insurance by Company.

GZA GeoEnvironmental, Inc.
Equal Opportunity - Affirmative Action Employer
M/F/V/H

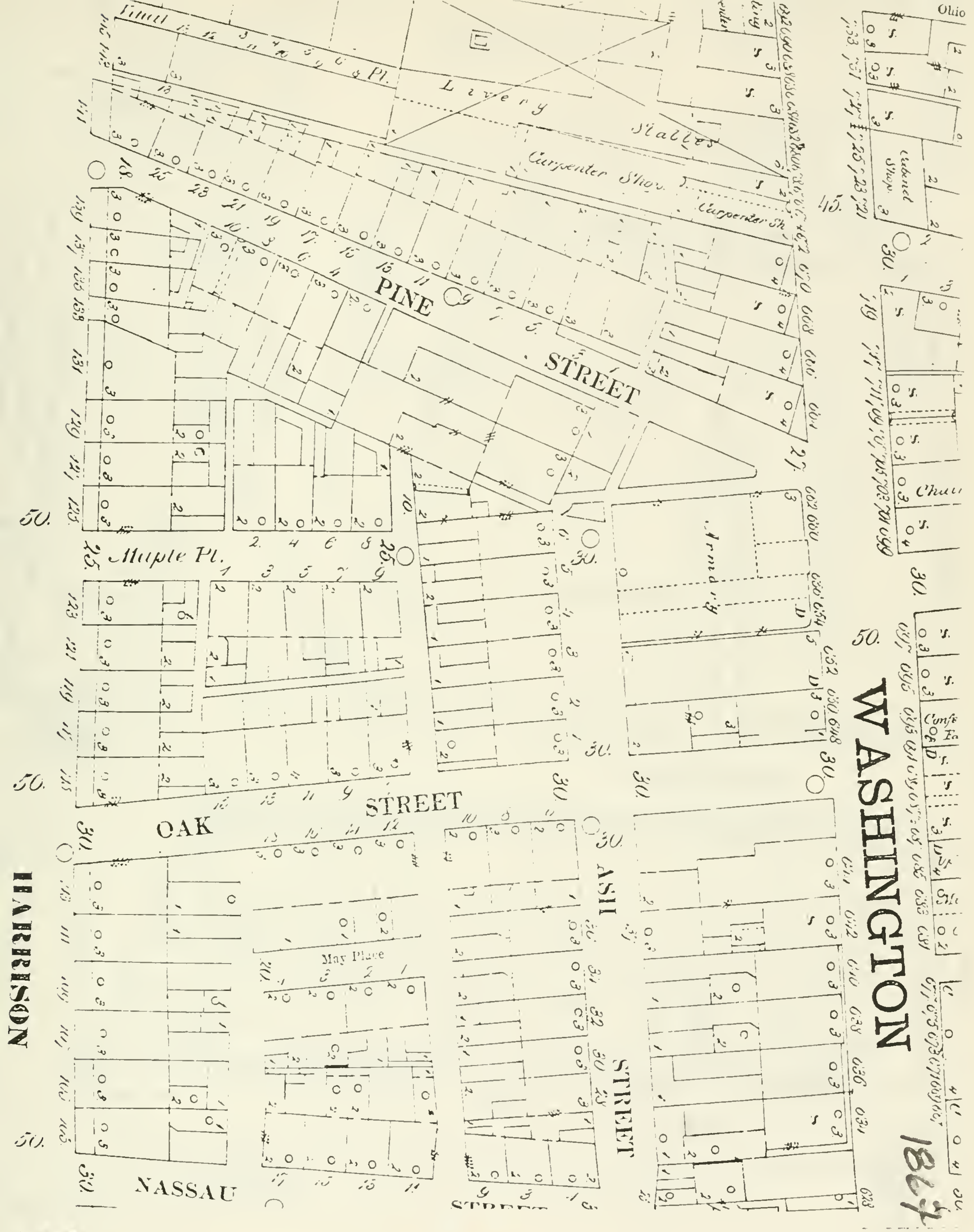
GZA

APPENDIX B

SANBORN MAPS OF PARCEL A AND VICINITY

APPENDIX B

SANBORN MAPS OF PARCEL A AND VICINITY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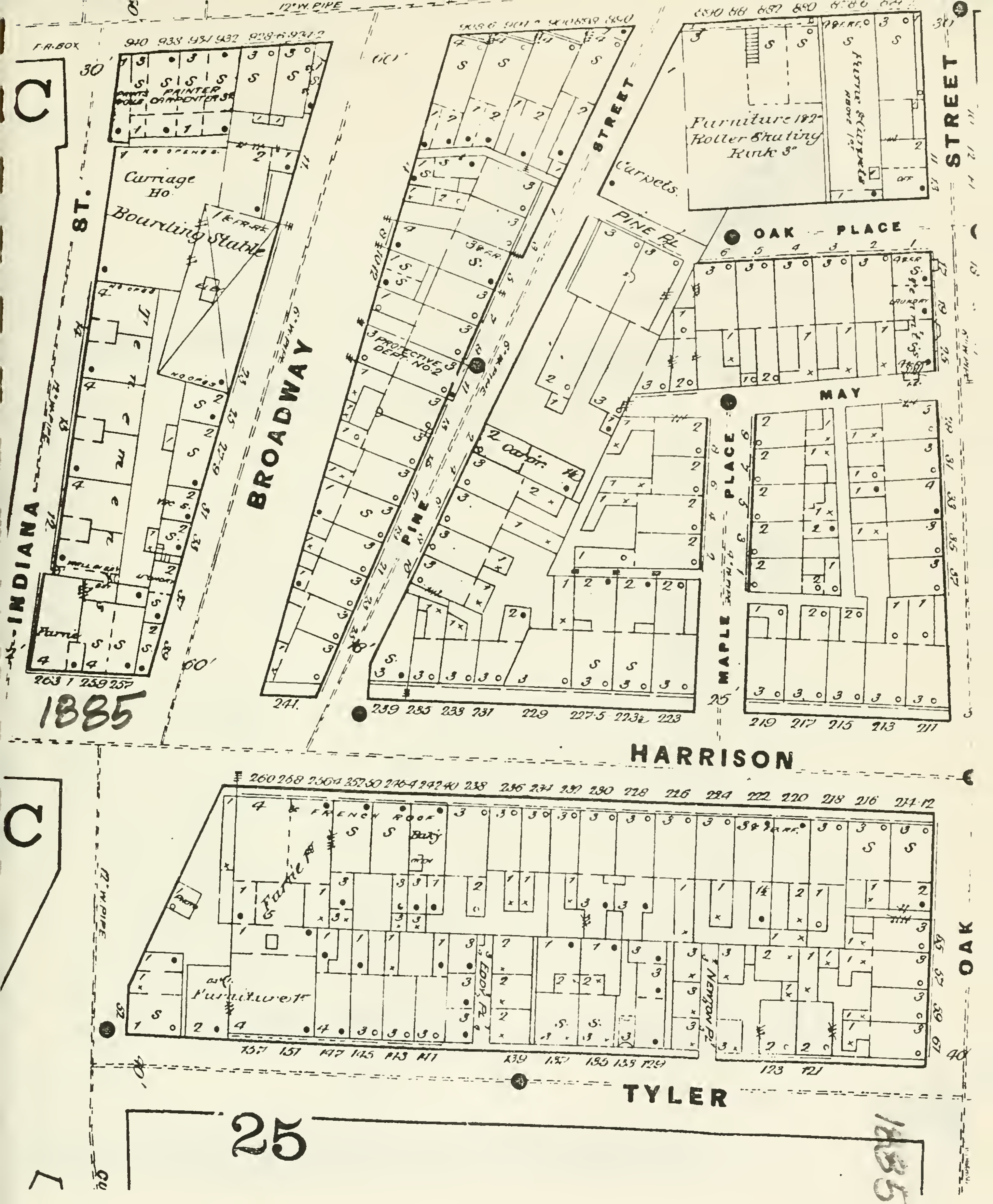
Carpenter Sh.
Cabinet Shop
Ohio
Chur
Conf. of D.
PINE STREET
Armory
WASHINGTON
Maple Pl.
OAK STREET
ASH STREET
May Place
NASSAU
STREET
HARRISON

1867

1867

INDIANA

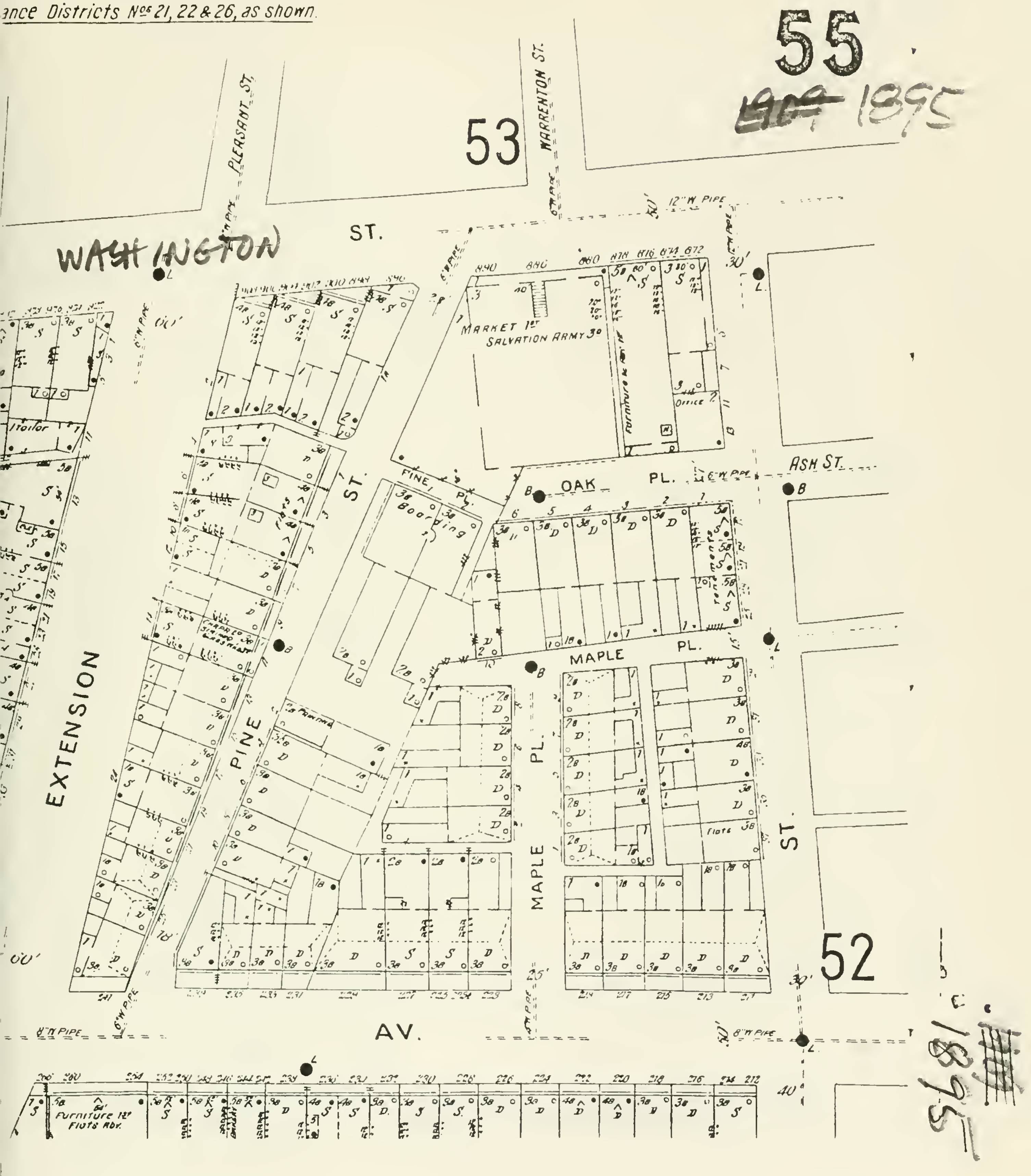

INDIANA ST.
BROADWAY
PINE STREET
STREET
OAK PLACE
PINE PL.
MAY
MAPLE PLACE
HARRISON
TYLER
OAK
Carriage Ho
Boarding Stable
Painter Carpenter Sh.
3 Protective Dept. No. 2
Carpets.
Furniture 1&2 Roller Skating Rink 3°
French Roof
Furniture 1st
Newton Pl.
Eddy Pl.
12"W. PIPE
F.A. BOX
25

1885

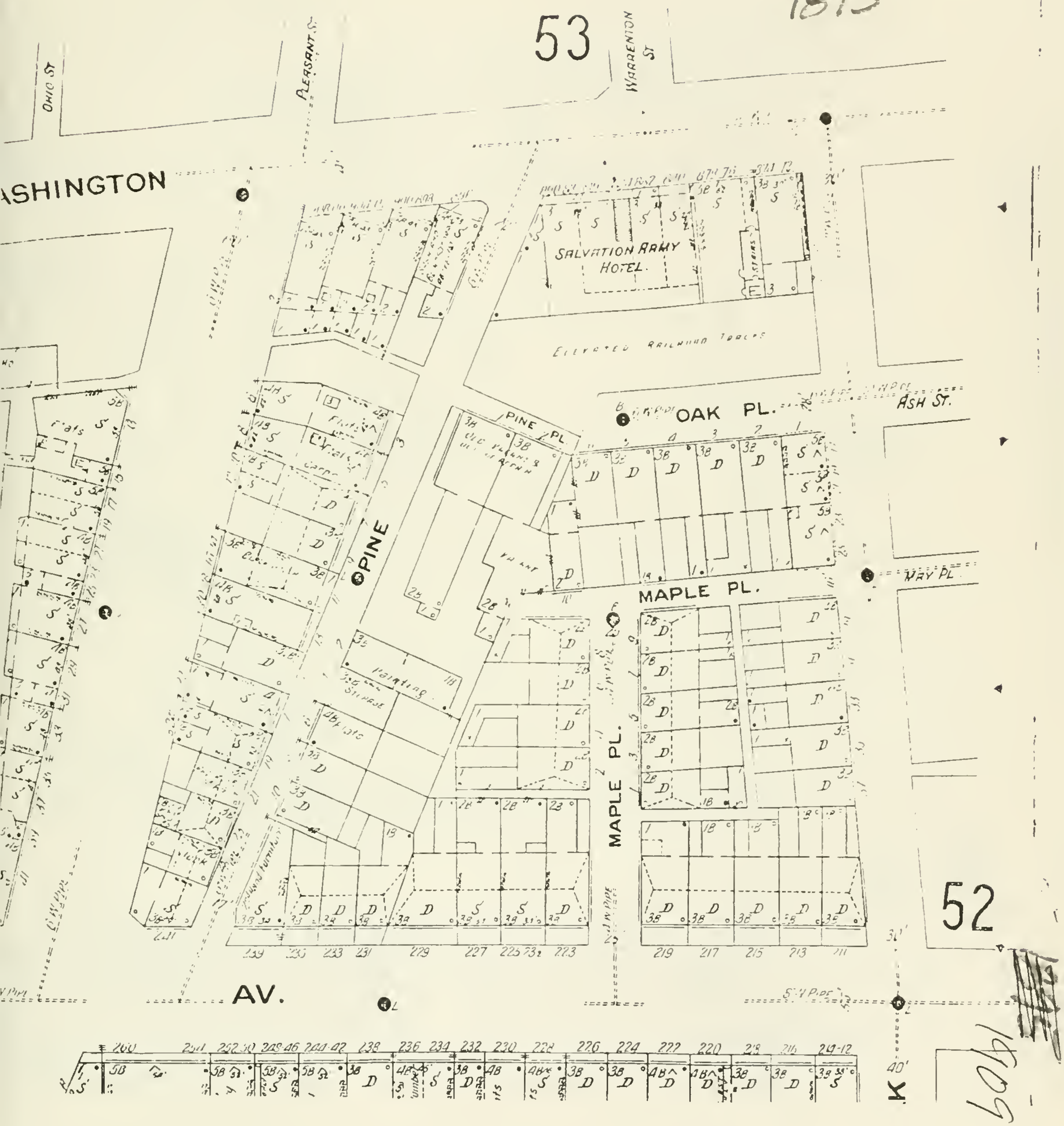
1885

ance Districts Nos 21, 22 & 26, as shown.

~~190~~ 1895



1895


OHIO ST
PLEASANT ST
53
WARRENTON ST
ASHINGTON
SALVATION ARMY HOTEL
ELEVATED RAILROAD TRACKS
PINE PL
OAK PL.
ASH ST.
PINE
MAPLE PL.
MAY PL
MAPLE PL.
Painting
Storage
Flats
52
AV.
239
235
233
231
229
227
225
223
219
217
215
213
211
260
254
252-50
248-46
244-42
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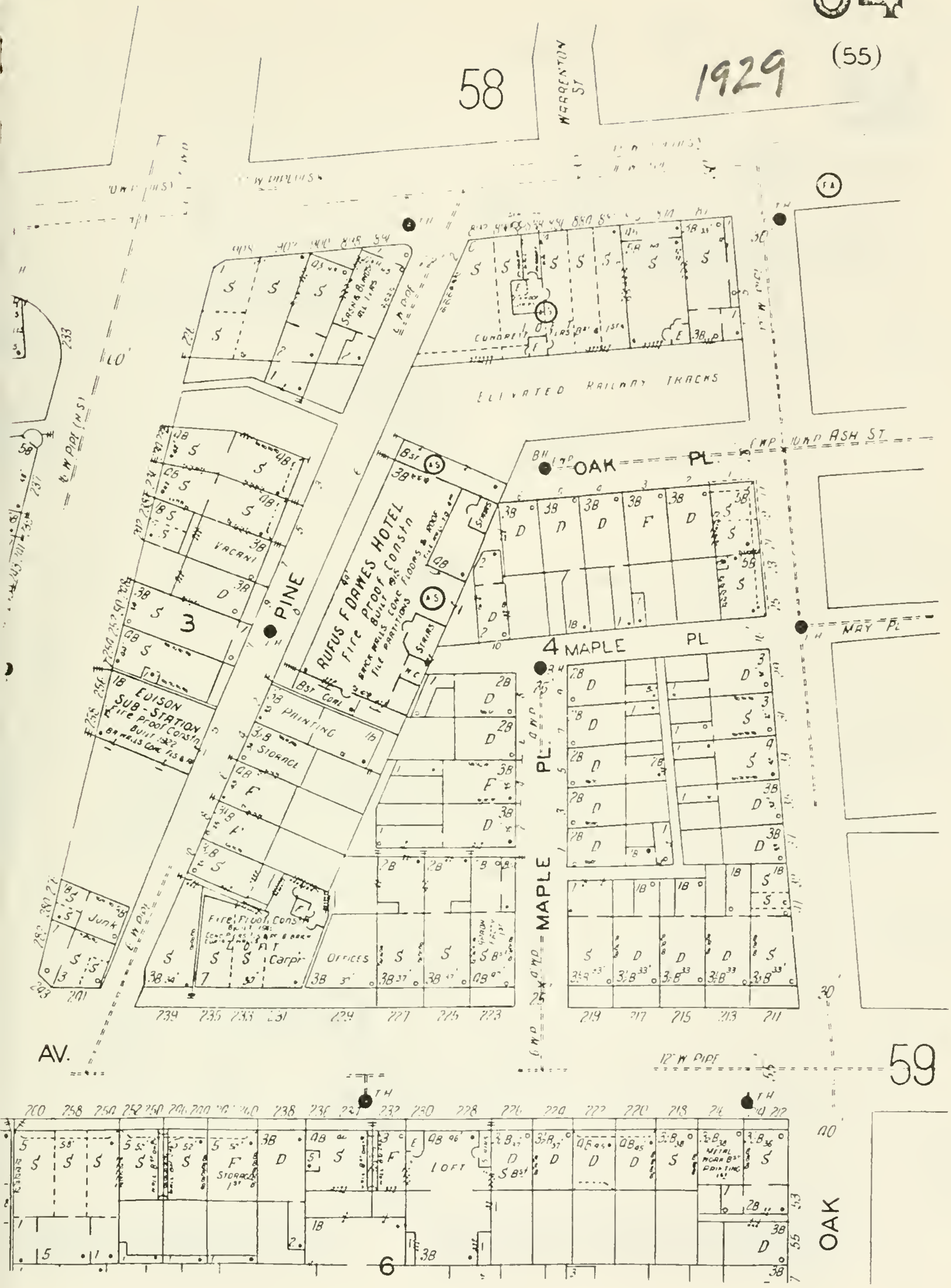
214-12
K
30'
40'

1409

1929


58
WARRENTON ST
ELEVATED RAILWAY TRACKS
OAK PL
MAPLE PL
MAY PL
ASH ST
PINE
MAPLE PL
OAK
AV.
3
4
6
59
RUFUS F DAWES HOTEL
Fire Proof Constn
EDISON SUB-STATION
Fire Proof Constn
Built 1922
VACANT
PAINTING
STORAGE
Junk
Offices
Carpr
LOFT
Fire Proof Constn
STORAGE
12" W PIPE
239
235
233
231
229
227
225
223
219
217
215
213
211
260
258
256
252
250
238
236
232
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228
226
224
222
220
218
216
212

1929

MASS. . 004

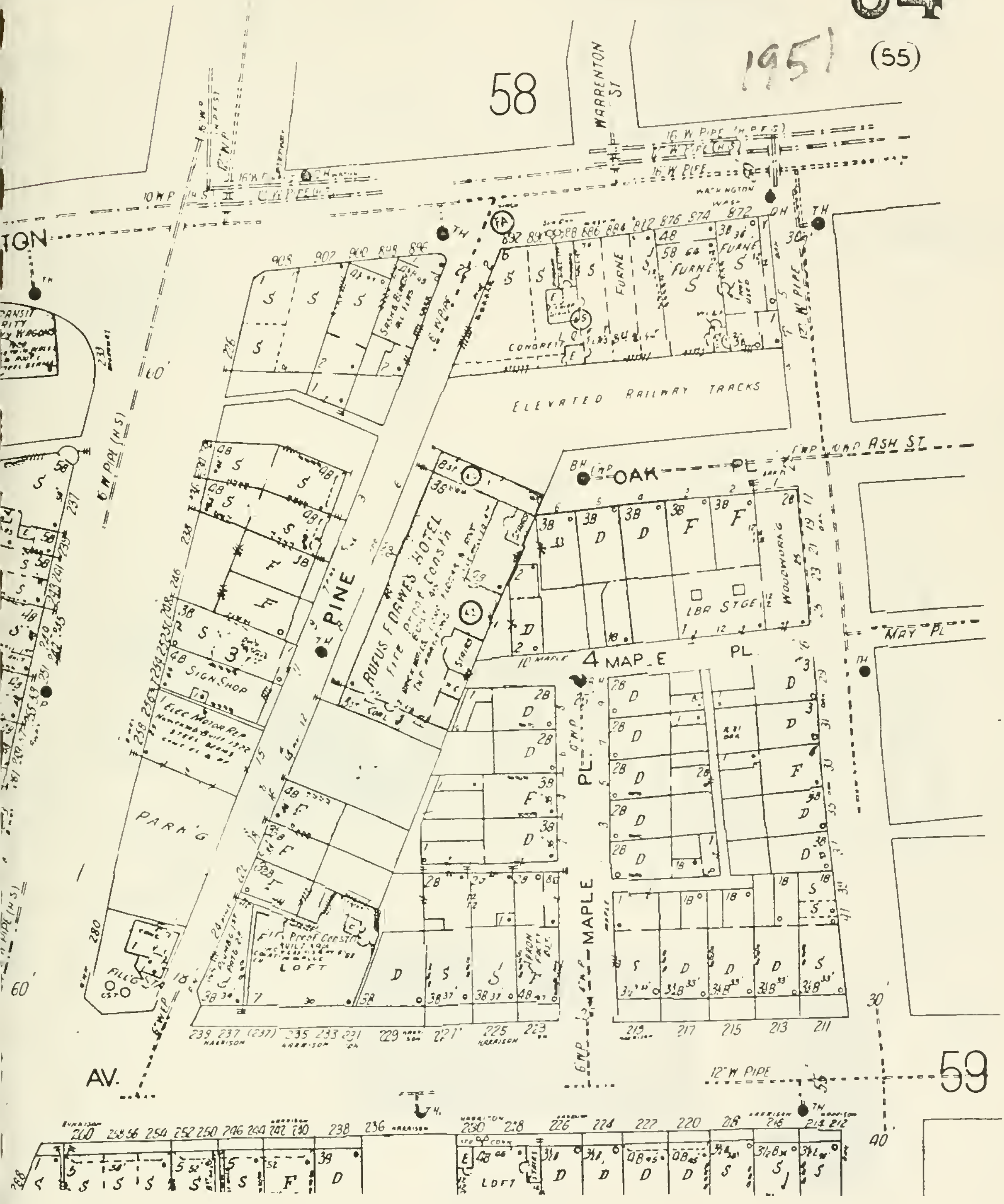
(13?)

BOSTON MASS VOL I SOUTH

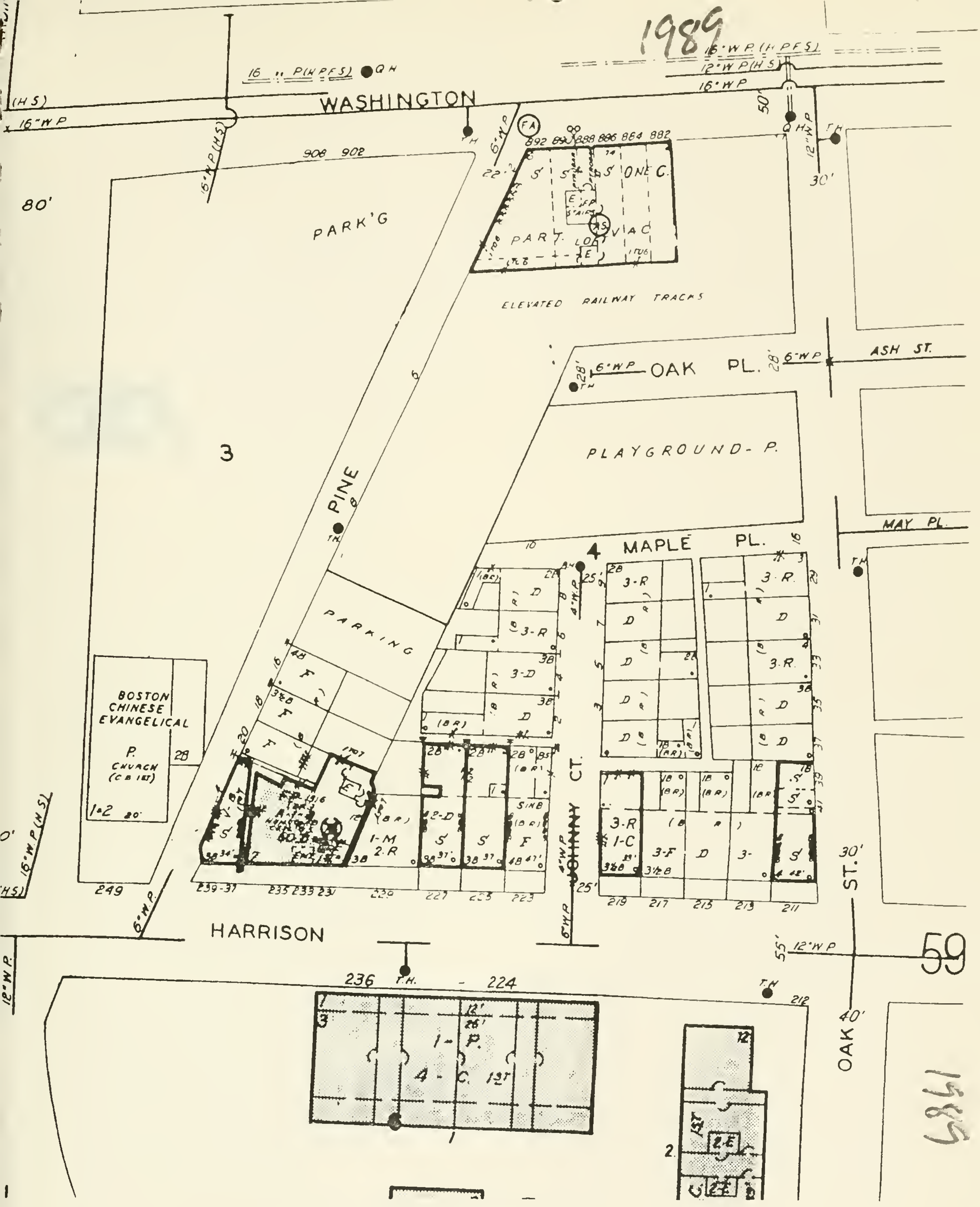
64

1951

(55)



1989


WASHINGTON
16" W P
16" W P (H P F S)
12" W P (H S)
16 " P (H P F S)
Q H
T H
F A
908 902
892 890 888 886 884 882
80'
PARK'G
ONE C.
PART. LOT VAC
ELEVATED RAILWAY TRACKS
30'
50'
ASH ST.
OAK PL.
6" W P
28'
3
PINE
PLAYGROUND - P.
MAPLE PL.
MAY PL.
4
PARKING
BOSTON CHINESE EVANGELICAL
P. CHURCH (C B 1ST)
1-2
249
239-37
235 233 231
229
227
225
223
219
217
215
213
211
JOHNNY CT.
25'
3-R
D
3-D
S
F
1-M 2-R
3-R 1-C
3-F
HARRISON
236
224
212
1-P.
4-C. 1ST
2.
1
12" W P
55'
30'
ST.
OAK
40'
59
1989

APPENDIX C

EXCERPTS FROM DEP "LIST OF CONFIRMED DISPOSAL SITES AND LOCATIONS TO BE INVESTIGATED"

MASTER INDEX OF ALL SITES AND LOCATIONS

April 15, 1991

Town	Site Number	Name	Address	Currently Listed	On Page	New to Book
BLANDFORD	1-0026	POTASH BROOK	RTE 23	REMEDIAL	REM - 4	
BLANDFORD	1-0799	SERVICE STATION 2E	MA TRNPK, MILE MARKER 29.1	L.T.B.I.	LTB - 11	
BLANDFORD	1-0796	SERVICE STATION 2W	MA TRNPK, MILE MARKER 29.1	CONFIRMED	CON - 29	
BOSTON	3-2036	A. WILSON INC.	364 AMORY ST.	L.T.B.I.	LTB - 11	
BOSTON	3-1986	ADAMS & SWETT	376-384 DORCHESTER AVE.	WAIVER	WAV - 4	
BOSTON	3-1284	ADVANCED VIADUCT/CANA		CONFIRMED	CON - 29	
BOSTON	3-0701	ALBANY CARPET CLEANING	20-32 RUGGS RD.	L.T.B.I.	LTB - 11	
BOSTON	3-1980	ALBANY ST. BUS GARAGE	ALBANY ST. MBTA	L.T.B.I.	LTB - 11	
BOSTON	3-3216	ALLEN FURNITURE	172 ROSLINDALE AVE.	L.T.B.I.	LTB - 11	
BOSTON	3-2368	ALLSTON CAR WASH	434 CAMBRIDGE ST.	L.T.B.I.	LTB - 11	
BOSTON	3-1789	APARTMENT BUILDING	2 PALACE RD.	L.T.B.I.	LTB - 11	
BOSTON	3-1510	APOLLO FLOORS	121-129 HAMILTON ST.	L.T.B.I.	LTB - 11	
BOSTON	3-2696	ARBORWAY CORP.	3607 WASHINGTON ST.	L.T.B.I.	LTB - 11	
BOSTON	3-2506	ARROW REALTY TRUST	302-400 WESTERN AVE.	WAIVER	WAV - 4	
BOSTON	3-1908	ASHMONT AUTO BODY	551 TALBOT AVE.	L.T.B.I.	LTB - 11	
BOSTON	3-1254	ATLANTIC BRANDS	301 SOUTHAMPTON ST.	L.T.B.I.	LTB - 11	
BOSTON	3-1246	ATLANTIC FUELS MARKETING	500 NEPONSET AVE.	CONFIRMED	CON - 30	
BOSTON	3-0104	ATLANTIC METAL INDUSTRIES	258-260 WASHINGTON ST.	CONFIRMED	CON - 30	
BOSTON	3-1182	AUBURN TRUCKING	726-728 EAST BROADWAY	L.T.B.I.	LTB - 11	
BOSTON	3-0621	AUTO BODY SHOPS	1686 COMMONWEALTH AVE.	WAIVER	WAV - 4	
BOSTON	3-0995	AVIS	58 HIGH ST.	L.T.B.I.	LTB - 11	
BOSTON	3-1935	AVIS RENT-A-CAR	375 MCCLELLAN HWY	WAIVER	WAV - 4	
BOSTON	3-2438	BANK OF NEW ENGLAND	439 RUTHERFORD AVE.	WAIVER	WAV - 4	
BOSTON	3-2034	BAY STATE AUTO SPRING MFG	83 HAMPDEN ST.	L.T.B.I.	LTB - 11	

April 15, 1991

Town	Site Number	Name	Address	Currently Listed		New to [illegible]
BOSTON	3-1627	BAYSIDE [illegible] CENTER	20 MT. VERNON ST.	L.T.B.I.		
BOSTON	3-0788	BEACON [illegible]	69 NORTH BEACON ST.	L.T.B.I.	1	
BOSTON	3-2944	BEDFORD/KINGSTON PARCEL	1 LINCOLN ST.	WAIVER	4	
BOSTON	3-1577	BELCHER-[illegible]	MCCLELLAN HWY	WAIVER	4	
BOSTON	3-0152	BIW CABLE SYSTEMS	65 BAY ST.	WAIVER	4	
BOSTON	3-1069	[illegible] PRESS	320 D ST.	L.T.B.I.	[illegible]	
BOSTON	3-1744	BOSTON	BRIGHTON	DELETED	3	
BOSTON	3-3124	BOSTON [illegible]	310 NORTHERN AVE.	WAIVER	[illegible]	
BOSTON	3-2988	BOSTON EDISON CABLE 329-510	CAMBRIDGE ST.	CONFIRMED	[illegible]	
BOSTON	3-2989	BOSTON EDISON CABLE 329-510	SOLDIERS FIELD RD, RIVER ST.	CONFIRMED	[illegible]	
BOSTON	3-3419	BOSTON EDISON CO.	71-73 BORDER ST.	L.T.B.I.	1	
BOSTON	3-3183	BOSTON EDISON STATION #36	1207 COMMONWEALTH AVE.	L.T.B.I.	[illegible]	
BOSTON	3-0119	BOSTON EDISON STATION #385	K ST.	CONFIRMED		
BOSTON	3-3555	BOSTON EDISON STATION #468	ROCKINGHAM AVE.	L.T.B.I.	[illegible]	Yes
BOSTON	3-0923	BOSTON EDISON, MYSTIC STAT	176 ALFORD ST.	L.T.B.I.	[illegible]	
BOSTON	3-0969	BOSTON [illegible] CO.	350 ADAMS ST.	L.T.B.I.	[illegible]	
BOSTON	3-2656	BOSTON GLOBE	135 WM T MORRISSEY BLVD	L.T.B.I.	[illegible]	
BOSTON	3-1804	BOSTON HOUSING AUTHORITY	125 AMORY ST.	L.T.B.I.	2	
BOSTON	3-0580	BOSTON [illegible]	14 LOUIS ST.	CONFIRMED	30	
BOSTON	3-0763	BOSTON MARINE INDUST PK.	SUMMER ST.	L.T.B.I.	2	
BOSTON	3-1305	BOSTON THERMAL ENERGY CO.	SUMMER & DORCHESTER STS.	L.T.B.I.	[illegible]	
BOSTON	3-1487	BOSTON UNIVERSITY	120 ASHFORD ST.	L.T.B.I.	4	
BOSTON	3-2091	BRA PARCELS R11B & R11C	26 E. CONCORD ST.	WAIVER	4	
BOSTON	3-0086	BRAEMORE CONDOS	464-466 COMMONWEALTH AVE.	WAIVER	4	

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BOSTON	3-3131	BRENTON CLOTHING COMPANY	242 EAST BERKLEY ST.	CONFIRMED	CON - 30	
BOSTON	3-2596	BRIGHAM & WOMAN'S HOSPITAL	75 FRANCIS ST.	L.T.B.I.	LTB - 12	
BOSTON	3-2677	BRIGHTON AUTO BODY	11 FANEUIL ST.	L.T.B.I.	LTB - 12	
BOSTON	3-1984	BRUSH HILL TRANSPORTATION	170R GRANITE /62R HILLTOP	L.T.B.I.	LTB - 12	
BOSTON	3-3380	BUDGET RENT A CAR	204 PORTER ST.	L.T.B.I.	LTB - 12	
BOSTON	3-2039	BUNKER HILL REFINERY	423 MEDFORD ST.	L.T.B.I.	LTB - 12	
BOSTON	3-3338	C & L AUTO	931 MASSACHUSETTS AVE.	L.T.B.I.	LTB - 12	
BOSTON	3-3096	CABOT YARD/MBTA	DORCESTER AVE.	CONFIRMED	CON - 31	
BOSTON	3-2016	CHARLES SERVICE STATION	320 MAVERICK ST.	L.T.B.I.	LTB - 12	
BOSTON	3-0591	CHARLESTOWN CONDOMINIUMS	HARVARD ST.	CONFIRMED	CON - 31	
BOSTON	3-0243	CHILDRENS HOSPITAL	BINNEY ST.	CONFIRMED	CON - 31	
BOSTON	3-1367	CITGO GAS STATION	1600 TREMONT ST.	L.T.B.I.	LTB - 12	
BOSTON	3-1232	CITGO STATION	529 GENEVA AVE.	WAIVER	WAV - 4	
BOSTON	3-2854	CITY OF BOSTON TRANS.	200 FRONTABE RD.	L.T.B.I.	LTB - 12	
BOSTON	3-2737	CITY PROPERTY	43 HAWKINS ST.	L.T.B.I.	LTB - 12	
BOSTON	3-2126	CLAIR MOTORS	1575 VFW PKWY	L.T.B.I.	LTB - 12	
BOSTON	3-3288	CLEAN INDUSTRY, INC.	170 BORDER ST.	L.T.B.I.	LTB - 12	
BOSTON	3-2784	COLONIAL THEATER	100 BOYLSTON ST.	L.T.B.I.	LTB - 12	
BOSTON	3-0001	COLOUR PICTURE/PAPERMAGIC	76 ATHERTON ST.	REMEDIAL	REM - 4	
BOSTON	3-2331	COLUMBIA YACHT CLUB	1825 COLUMBIA RD.	L.T.B.I.	LTB - 12	
BOSTON	3-2297	COLUMBUS PARK HEADWORKS	COLUMBUS PARK	L.T.B.I.	LTB - 12	
BOSTON	3-0156	COMMERCIAL BUILDING	360 NEWBURY ST.	CONFIRMED	CON - 31	
BOSTON	3-1637	COMMERCIAL POINT LNG PLANT	220 VICTORY RD.	L.T.B.I.	LTB - 12	
BOSTON	3-1977	COMMERCIAL PROPERTY	70 SOUTH BAY & BRADSTON	WAIVER	WAV - 4	

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BOSTON	3-2070	COMMERCI	1302-1318 BOYLSTON ST.	L.T.B.I.	LTB - 12	
BOSTON	3-3584	COMMERCIA	99-117 BICKFORD ST	L.T.B.I.	LTB 12	Yes
BOSTON	3-0069	CONDOMINI	5 MYRTLE ST.	REMEDIAL	REM - 4	
BOSTON	3-0242	CONDOMINI	7 MYRTLE ST.	REMEDIAL	REM - 4	
BOSTON	3-2641	CONSTRUCTI	430 MCCLELLAN HWY	L.T.B.I.	LTB - 12	
BOSTON	3-0500	CONSTRUCTI	64 BROAD ST.	L.T.B.I.	LTB - 12	
BOSTON	3-0615	D'AMICO D	41 HALLET ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0955	DAVES MOTC ATION	1 DAVES WAY	L.T.B.I.	LTB - 13	
BOSTON	3-1901	DECON TRAN	329 WEST SECOND ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0159	DEVANEY FU	21 SPRINGVALE AVE.	L.T.B.I.	LTB - 13	
BOSTON	3-1985	DEVELOPMEN	74-88 QUEENSBURY ST.	CONFIRMED	CON - 31	
BOSTON	3-0080	DISCOUNT F	739-745 WASHINGTON ST.	CONFIRMED	CON - 31	
BOSTON	3-0703	DUDLEY ST	252 - 256 DUDLEY ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0869	DURFEE MOT	40 ALCORN ST.	L.T.B.I.	LTB - 13	
BOSTON	3-1374	DUTCH TREA	1931 DORCHESTER AVE.	L.T.B.I.	LTB - 13	
BOSTON	3-0896	E.J. SMIT	259 QUINCY ST.	L.T.B.I.	LTB - 13	
BOSTON	3-3068	EAST BOSTC	BREMAN ST.	L.T.B.I.	LTB - 13	
BOSTON	3-1076	EDWARD'S J	RONALD & MORSE STS.	L.T.B.I.	LTB - 13	
BOSTON	3-2381	ELECTRIC	194 FREEPORT ST.	WAIVER	WAV - 4	
BOSTON	3-0632	EMERSON AL RVICE	420 E. THIRD ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0744	EXXON #502	1789 CENTRE ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0743	EXXON #5	L ST. & 607 E. 3RD ST.	L.T.B.I.	LTB - 13	
BOSTON	3-3327	EXXON GAS	719 GALLIVAN BLVD	L.T.B.I.	LTB - 13	
BOSTON	3-1978	EXXON STA	198 WESTERN AVE.	L.T.B.I.	LTB - 13	

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BOSTON	3-2616	EXXON STATION	AIRPORT RD. LOGAN AIRPORT	L.T.B.I.	LTB - 13	
BOSTON	3-1826	FABREEKA MILLS COMPLEX	1190 ADAMS ST.	L.T.B.I.	LTB - 13	
BOSTON	3-0244	FEDERAL METAL FINISHING	18 DARRANCE ST.	CONFIRMED	CON - 31	
BOSTON	3-2827	FENWAY MOTOR SALES	1325 BOYLSTON ST.	L.T.B.I.	LTB - 13	
BOSTON	3-1979	FORMER AUTOMOBILE JUNKYARD	434 AMORY ST. PARC.2218-9	WAIVER	WAV - 4	
BOSTON	3-1417	FORMER BAKER CHOCOLATE MILLS	ADAMS ST. & CENTRAL AVE.	L.T.B.I.	LTB - 13	
BOSTON	3-1747	FORMER BRASS FOUNDRY	PLYMPTON & HARRISON AVE.	L.T.B.I.	LTB - 13	
BOSTON	3-2030	FORMER BUCKLEY & MANN	B ST.	L.T.B.I.	LTB - 13	
BOSTON	3-1414	FORMER CITGO STATION	480 WASHINGTON ST.	L.T.B.I.	LTB - 13	
BOSTON	3-2019	FORMER DEALERSHIP	1780 CENTER ST.	L.T.B.I.	LTB - 13	
BOSTON	0-0678	FORMER DONNOLY-ACKERLY	300 FREEPORT	DELETED	DEL - 3	
BOSTON	3-2057	FORMER DRYCLEANER/CANA	CHELSEA & GREY ST.	CONFIRMED	CON - 31	
BOSTON	3-1642	FORMER DYE WORKS	JAMAICA ST.	L.T.B.I.	LTB - 13	
BOSTON	3-2025	FORMER EMPIRE OIL CO.	1349 HYDE PARK AVE.	L.T.B.I.	LTB - 14	
BOSTON	3-0890	FORMER EXXON #3-5027	3 NEPONSET AVE.	L.T.B.I.	LTB - 14	
BOSTON	3-1641	FORMER FACTORIES/UTILITIES	NEW DUDLEY ST.	L.T.B.I.	LTB - 14	
BOSTON	3-0636	FORMER FARNSWORTH FIBER CO.	24 FARNSWORTH ST.	WAIVER	WAV - 5	
BOSTON	3-2203	FORMER GAS COMPANY	409 E. FIRST ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1647	FORMER GAS PLANT	MCBRIDE ST.	L.T.B.I.	LTB - 14	
BOSTON	3-3020	FORMER GAS SERVICE STATION	100 SPRING ST.	CONFIRMED	CON - 32	
BOSTON	3-1059	FORMER GAS STATION	869 CUMMINGS HWY	L.T.B.I.	LTB - 14	
BOSTON	3-1592	FORMER GAS STATION	1765 CENTRE ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1805	FORMER GAS STATION	326 CAMBRIDGE ST.	WAIVER	WAV - 5	
BOSTON	3-1948	FORMER GAS STATION	120 BLUE HILL AVE.	L.T.B.I.	LTB - 14	

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BOSTON	3-2136	FORMER GAS STATION	1563 BLUE HILL AVE.	L.T.B.I.	LTB - 14	
BOSTON	3-0892	FORMER GAS STATION	5180-5194 WASHINGTON ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1576	FORMER GAS STATION	152 OLD COLONY AVE.	L.T.B.I.	LTB - 14	
BOSTON	3-1749	FORMER GASOMETER	COLUMBUS AVE. & CAMDEN ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1750	FORMER HEATING CO.	GROTON & WASHINGTON ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1644	FORMER IRON WORKS	OLNEY ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1645	FORMER MACHINE SHOPS	WHITTER ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1646	FORMER MANUFACTURERS	PRENTISS ST.	L.T.B.I.	LTB - 14	
BOSTON	3-0060	FORMER MASTER CHEMICAL	29 BRADSTON ST.	CONFIRMED	CON - 32	
BOSTON	3-2031	FORMER METAL ASSAYING STUD	38-42 AGUADELLA ST.	L.T.B.I.	LTB - 14	
BOSTON	3-0248	FORMER MOBIL STATION	425 SUMMER ST.	CONFIRMED	CON - 32	
BOSTON	3-0245	FORMER NATIONAL LEAD CO.	800 ALBANY AVE.	WAIVER	WAV - 5	
BOSTON	3-1215	FORMER NAVAL SHIPYARD	8TH ST. PARCEL 1A BLDG 1997	L.T.B.I.	LTB - 14	
BOSTON	3-1643	FORMER NEFF CHEMICAL	GOODENOUGH ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1649	FORMER PLATING CO.	FULDA ST.	L.T.B.I.	LTB - 14	
BOSTON	3-1748	FORMER ROPE MANUFACTURER	COLUMBUS AVE. & CAMDEN ST.	L.T.B.I.	LTB - 14	
BOSTON	3-2087	FORMER SPECIALTY CHEMICA	CUMMINGS HWY	L.T.B.I.	LTB - 14	
BOSTON	3-1648	FORMER STURTEVANT FOUNDRY	UNION ST. & UNION AVE.	L.T.B.I.	LTB - 14	
BOSTON	3-0643	FORMER TEXACO	1660 VFW PKWY	L.T.B.I.	LTB - 14	
BOSTON	3-2660	GARAGE	NORTH STATION	L.T.B.I.	LTB - 15	
BOSTON	3-0198	GAS STATION	442 D ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1398	GAS STATION	282 WASHINGTON ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1526	GAS STATION	53 SPRING ST.	L.T.B.I.	LTB - 15	
BOSTON	3-2623	GAS STATION	888 DORCHESTER AVE.	WAIVER	WAV - 5	

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BOSTON	3-2669	GAS STATION	815 GALLIVAN BLVD	CONFIRMED	CON - 32	
BOSTON	3-2796	GAS STATION	4415 WASINGTON ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1793	GASOLINE STATION	610 HYDE PARK AVE.	L.T.B.I.	LTB - 15	
BOSTON	3-1064	GEORGE WRITE GOLF COURSE	420 WEST ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1548	GIBBS SERVICE STATION	1660 SOLDIERS FIELD RD.	L.T.B.I.	LTB - 15	
BOSTON	3-1488	GIBBS SERVICE STATION	5315 WASHINGTON ST.	L.T.B.I.	LTB - 15	
BOSTON	3-3428	GIBBS SERVICE STATION #267	1820 HYDE PARK AVE.	L.T.B.I.	LTB - 15	
BOSTON	3-2966	GILLETTE COMPANY	35 MOUNT WASHINGTON AVE.	WAIVER	WAV - 5	
BOSTON	3-0025	GULF STATION	931 BENNINGTON ST.	CONFIRMED	CON - 32	
BOSTON	3-0815	H.P. HOOD	500 RUTHERFORD AVE.	CONFIRMED	CON - 32	
BOSTON	3-2728	HARVARD UNIVERSITY PROPERTY	155 NORTH HARVARD ST.	WAIVER	WAV - 5	
BOSTON	3-0158	HONEYWELL	38 LIFE ST.	CONFIRMED	CON - 32	
BOSTON	3-3346	HOSPITAL LAUNDRY ASSOC.	175 IPSWICH ST. & LANSDOWNE	L.T.B.I.	LTB - 15	
BOSTON	3-0816	HOWARD CHEVROLET	361 BELGRADE AVE.	L.T.B.I.	LTB - 15	
BOSTON	3-2465	HOWDEN SIROCCO	1 WESTINGHOUSE PLAZA	WAIVER	WAV - 5	
BOSTON	3-1885	HUB BUILDING	1134 WASHINGTON ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1903	INDUSTRIAL AREA	135 OLD COLONY AVE. & D ST.	REMEDIAL	REM - 4	
BOSTON	3-0250	INDUSTRIAL COMPLEX	296-300 FREEPORT ST.	CONFIRMED	CON - 32	
BOSTON	3-2097	INDUSTRIAL PROPERTY	119 BRAINTREE ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1996	INDUSTRIAL PROPERTY	20-56,31-47 KEMBLE ST.	WAIVER	WAV - 5	
BOSTON	3-1286	INDUSTRIAL PROPERTY	11-52 BINFORD ST.	L.T.B.I.	LTB - 15	
BOSTON	3-2222	INSTITUTIONAL PROPERTY	206-214 RIVERWAY	L.T.B.I.	LTB - 15	
BOSTON	3-0254	INTERNATIONAL PLACE	FORTHILL SQ.	L.T.B.I.	LTB - 15	
BOSTON	3-0045	J & B PLASTICS CO.	314 WEST SECOND ST.	L.T.B.I.	LTB - 15	

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BOSTON	3-0364	JFK/UMASS MODERNIZATI	151 MT. VERNON ST.	REMEDIAL	REM - 4	
BOSTON	3-3511	JOE'S SUNOCO	398 HYDE PARK AVENUE	CONFIRMED	CON - 33	Yes
BOSTON	3-1803	JOHN HENRY ROOFING CO.	48 HITCHBORN ST.	L.T.B.I.	LTB - 15	
BOSTON	3-1473	JUNKYARD	19-25 LANESVILLE TER.	L.T.B.I.	LTB - 15	
BOSTON	3-0058	KING TERMINAL	SUMMER, EAST 1ST & K STS.	CONFIRMED	CON - 33	
BOSTON	3-0730	L.E. MASON-MAGNESIUM	98 BUSINESS ST.	L.T.B.I.	LTB - 15	
BOSTON	3-3108	LACONIA & BOSTON, INC	1340 COMMONWEALTH AVE.	L.T.B.I.	LTB - 15	
BOSTON	3-0839	LAIDLAW WASTE SYSTEMS	530 E. FIRST ST.	L.T.B.I.	LTB - 15	
BOSTON	3-2089	LANGHAM COURT DEVELOPMENT	WEST SPRINGFIELD ST.	WAIVER	WAV - 5	
BOSTON	3-1616	LEWIS CHEMICAL CORP.	12 FAIRMONT COURT	CONFIRMED	CON - 33	
BOSTON	3-2664	LEWIS WHARF	20 EASTERN AVE, 60-90 L.W.	WAIVER	WAV - 5	Yes
BOSTON	3-3084	LINDBERG CORPORATION	475 DORCESTER AVE.	CONFIRMED	CON - 33	
BOSTON	3-0255	LIQUIDATOR/PENN CENT	140 FREEPORT ST.	CONFIRMED	CON - 33	
BOSTON	3-0780	LM&W MANAGEMENT	294 WASHINGTON ST.	L.T.B.I.	LTB - 15	
BOSTON	3-2746	LOCAL #25	544 MAIN ST.	L.T.B.I.	LTB - 16	
BOSTON	3-0177	LOCKPORT MANUFACTURI	99 R CONDOR ST.	L.T.B.I.	LTB - 15	
BOSTON	3-2431	LOGAN AIRPORT-BIRD	LOGAN AIRPORT	L.T.B.I.	LTB - 16	
BOSTON	3-1807	LOGAN AIRPORT-FIRE TR	MASSPORT(GOVERNORS ISLAND)	L.T.B.I.	LTB - 16	
BOSTON	3-0956	LOGAN AIRPORT-HERTZ	LOGAN AIRPORT	CONFIRMED	CON - 33	
BOSTON	3-1287	LOGAN AIRPORT-MASSPOR	LOGAN AIRPORT	CONFIRMED	CON - 33	
BOSTON	3-1449	LOGAN AIRPORT-TWA TA	208 PRESCOTT ST.	L.T.B.I.	LTB - 16	
BOSTON	3-3179	LOGAN TERMINAL E	LOGAN AIRPORT-TRUMP SHUTL	L.T.B.I.	LTB - 16	
BOSTON	3-2123	LONG ISLAND HOSPITA	LONG ISLAND	L.T.B.I.	LTB - 16	
BOSTON	3-2058	LOOP VIADUCT/CAMA	169 PORTLAND	CONFIRMED	CON - 33	

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BOSTON	3-1580	LORNE STREET HOUSING	24-58 LORNE ST.	WAIVER	WAV - 5	
BOSTON	3-3483	LOUIS WHARF	20 EASTERN AVE.	ERRATA	ERR - 3	
BOSTON	3-1349	LYONS PROPERTY	76-80 KEMBLE ST.	CONFIRMED	CON - 34	
BOSTON	3-2962	MA COLLEGE OF ARTS	621 HUNTINGTON AVE.	L.T.B.I.	LTB - 16	
BOSTON	3-0246	MACK TRUCK SITE	75 NORTH BEACON	REMEDIAL	REM - 4	
BOSTON	3-0251	MASS ELEC. CONST. CO.	180 GUEST ST.	CONFIRMED	CON - 34	
BOSTON	3-0122	MASS EYE & EAR	160 CHARLES ST.	L.T.B.I.	LTB - 16	
BOSTON	3-1802	MASSACHUSETTS GENERAL HOSP.	WHITE BUILDING	L.T.B.I.	LTB - 16	
BOSTON	3-2391	MASSACHUSETTS GENERAL HOSP.	55 FRUIT ST.	L.T.B.I.	LTB - 16	
BOSTON	3-1116	MASSPORT	256 MARGINAL ST.	L.T.B.I.	LTB - 16	
BOSTON	3-1307	MASSPORT	333 MEDFORD ST.	L.T.B.I.	LTB - 16	
BOSTON	3-0694	MASSPORT/FORMER SCHIAVONE	100 TERMINAL ST.	CONFIRMED	CON - 34	
BOSTON	3-1113	MATTAPAN CHRONIC DISEASE CNT	249 RIVER ST.	CONFIRMED	CON - 34	
BOSTON	3-2860	MBTA	2562 WASHINGTON ST.	L.T.B.I.	LTB - 16	
BOSTON	3-3357	MBTA	373 BROADWAY ST.	L.T.B.I.	LTB - 16	
BOSTON	3-3573	MBTA - PARCELS A,69,70&71	JACKSON SQUARE (AMORY ST.)	L.T.B.I.	LTB - 16	Yes
BOSTON	3-3103	MBTA CONSTRUCTION	170 FREEPORT ST.	WAIVER	WAV - 5	
BOSTON	3-3429	MBTA PARCEL 22	1177-1229 TREMONT ST.	L.T.B.I.	LTB - 16	
BOSTON	3-2624	MBTA PARCEL 25	TREMONT ST. & COLUMBUS AVE.	L.T.B.I.	LTB - 16	
BOSTON	3-3501	MBTA RED LINE	429 DORCHESTER AVE.	L.T.B.I.	LTB - 16	Yes
BOSTON	3-3209	MELLO FUEL COMPANY	95-97 STEDMAN ST.	WAIVER	WAV - 5	
BOSTON	3-1861	MERCHANT CAR LEASING	100 NEWMARKET SQUARE	L.T.B.I.	LTB - 16	
BOSTON	3-1105	MIDAS MUFFLER	HYDE PARK AVE.	L.T.B.I.	LTB - 16	
BOSTON	3-0256	MIDDLESEX TRUCK & COACH	65 GERARD ST.	CONFIRMED	CON - 34	

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BOSTON	3-1430	MILE RD DUMP	COLUMBIA PT.	L.T.B.I.	LTB - 16	
BOSTON	3-0592	MING REALTY TRUST	83 - 89 EAST COTTAGE ST.	CONFIRMED	CON - 34	
BOSTON	3-0779	MOBIL GASOLINE STATION#1-85	588 COMMERCIAL ST.	WAIVER	WAV - 5	
BOSTON	3-1558	MOBIL OIL CORP..	580 CHELSEA ST.	WAIVER	WAV - 5	
BOSTON	3-0183	MOBIL SERVICE STATION	1274 DORCHESTER AVE.	L.T.B.I.	LTB - 16	
BOSTON	3-1396	MOBIL SERVICE STATION	541 HUNTINGTON AVE.	WAIVER	WAV - 5	
BOSTON	3-3545	MOBIL SERVICE STATION #01-EM	150 FRIEND ST.	L.T.B.I.	LTB - 16	Yes
BOSTON	3-1484	MOBIL STATION	MAVERICK SQUARE	CONFIRMED	CON - 34	
BOSTON	3-3306	MOBIL STATION	273 EAST BERKLEY ST.	CONFIRMED	CON - 35	
BOSTON	3-3299	MOBIL STATION #01-087	1181 BLUE HILL AVE.	L.T.B.I.	LTB - 17	
BOSTON	3-3300	MOBIL STATION #01-103	1556 BLUE HILL AVE.	L.T.B.I.	LTB - 17	
BOSTON	3-3317	MOBIL STATION #01-201	1225 CENTRE ST.	L.T.B.I.	LTB - 17	
BOSTON	3-3302	MOBIL STATION #01-362	783 BLUE HILL AVE.	L.T.B.I.	LTB - 17	
BOSTON	3-0705	MOBIL STATION #01-JFE	753 AMERICAN LEGION HWY	L.T.B.I.	LTB - 17	Yes
BOSTON	3-3316	MOBIL STATION #01-POZ	1301 BOYLSTON ST.	L.T.B.I.	LTB - 17	
BOSTON	3-0967	MOBIL STATION #01-PDS	261 CAMBRIDGE ST.	WAIVER	WAV - 5	
BOSTON	3-3298	MOBIL STATION #01-PRL	631 WASHINGTON ST.	L.T.B.I.	LTB - 17	
BOSTON	3-3297	MOBIL STATION #01-OAK	168 WARREN ST.	L.T.B.I.	LTB - 17	
BOSTON	3-2551	MORAN/MYSTIC PIER	TERMINAL ST.	L.T.B.I.	LTB - 17	
BOSTON	3-0006	MOTIVE PARTS CO.	1887 - 1897 RIVER ST.	CONFIRMED	CON - 35	
BOSTON	3-0901	MUSEUM OF FINE ARTS	20-26 MUSEUM RD.	L.T.B.I.	LTB - 17	
BOSTON	3-1809	MWRA HEADWORKS	47 WARD ST.	L.T.B.I.	LTB - 17	
BOSTON	3-3372	NAVAL SHIPYARD(PARCELS 5,6,7)	CHELSEA ST.	WAIVER	WAV - 5	
BOSTON	3-3485	NEMCH 1-C	810-864 WASHINGTON ST.	WAIVER	WAV - 5	

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BOSTON	3-2228	NEPONSET DRIVE-IN THEATRE	OFF GALLIVAN BLVD	L.T.B.I.	LTB - 17	
BOSTON	3-2530	NEW CHARLESTOWN PUMP STAT.	ALFORD ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1613	NEW CONCEPTS,INC.	134-138 TUDOR ST.	L.T.B.I.	LTB - 17	
BOSTON	3-0013	NEW ENGLAND LIFE	500 BOYLSTON ST.	WAIVER	WAV - 5	
BOSTON	3-1798	NEW ENGLAND SLING & SUPPLY	70 KEMBLE ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1416	NORCROSS CO.	401 WEST FIRST ST.	L.T.B.I.	LTB - 17	
BOSTON	3-0247	NORTH SHORE RECYCLERS	B/WEST 1ST/CYPHER ST.	CONFIRMED	CON - 35	
BOSTON	3-0911	NORTHEAST BOILER	151 BORDER ST.	L.T.B.I.	LTB - 17	
BOSTON	3-0526	OLD NAVAL FUEL DEPOT	MCCLELLAN HWY	CONFIRMED	CON - 35	
BOSTON	3-1928	PARKING LOT	349 NEWBURY ST.	L.T.B.I.	LTB - 17	
BOSTON	3-3503	PARKING LOT	COLUMBUS AVE/ST. CYPRIANS	WAIVER	WAV - 5	Yes
BOSTON	3-3186	PEPSI-COLA BOTTLING CO.	140 WESTERN AVE.	CONFIRMED	CON - 35	
BOSTON	3-1520	POLICE STATION	69 PARIS ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1496	PROPERTY	215 SYDNEY ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1631	PROPERTY	70 REVERE ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1745	PROPERTY	16 COBDEN ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1634	PROPERTY	722 DOVER ST.	L.T.B.I.	LTB - 17	
BOSTON	3-1746	PROPERTY	629 HYDE PARK AVE.	L.T.B.I.	LTB - 17	
BOSTON	3-0740	PROPERTY	1010 HARRISON AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-0886	PROPERTY	1833 CENTRE ST.	L.T.B.I.	LTB - 18	
BOSTON	3-0943	PROPERTY	436-472 MAIN ST.	L.T.B.I.	LTB - 18	
BOSTON	3-1806	PROPERTY	116 HUNTINGTON AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-1871	PROPERTY	32 GARRISON ST.	L.T.B.I.	LTB - 18	
BOSTON	3-1819	PROPERTY	324 MARGINAL ST.	L.T.B.I.	LTB - 18	

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BOSTON	3-1942	PROPERTY	6-24 MEDFORD ST.	L.T.B.I.	LTB - 18	
BOSTON	3-1974	PROPERTY	585 COMMERCIAL AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-1923	PROPERTY	175 MCCLELLAN HWY	L.T.B.I.	LTB - 18	
BOSTON	3-1847	PROPERTY	34 MOORE ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2128	PROPERTY	WARREN & PEMBROKE ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2572	PROPERTY	123 OLIVER ST.	WAIVER	WAV - 5	
BOSTON	3-2119	PROPERTY	46 MOUNTFORT ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2181	PROPERTY	566 COMMONWEALTH AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-2000	PROPERTY	15 WASHINGTON ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2156	PROPERTY	40 BRAINTREE AT WILTON	L.T.B.I.	LTB - 18	
BOSTON	3-1379	PROPERTY	3885 WASHINGTON ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2197	PROPERTY	575 ALBANY ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2271	PROPERTY	1226-1228 MASS. AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-2663	PROPERTY	899-925 COMMONWEALTH AVE.	WAIVER	WAV - 5	
BOSTON	3-2676	PROPERTY	50 VAN WILLERN ST.	WAIVER	WAV - 5	
BOSTON	3-2674	PROPERTY	285 WM F MCCLELLAN HWY	L.T.B.I.	LTB - 18	
BOSTON	3-2721	PROPERTY	69 CHARLAME RD.	L.T.B.I.	LTB - 18	
BOSTON	3-2646	PROPERTY	120 CANAL ST.	L.T.B.I.	LTB - 18	
BOSTON	3-2661	PROPERTY	1144 SARATOGA & 2 SHASSHEEN	L.T.B.I.	LTB - 18	
BOSTON	3-2841	PROPERTY	191-199 HARVARD AVE.	L.T.B.I.	LTB - 18	
BOSTON	3-2936	PROPERTY	70 NEWMARKET SQUARE	L.T.B.I.	LTB - 18	
BOSTON	3-2963	PROPERTY	607 BOYLSTON ST.	L.T.B.I.	LTB - 19	
BOSTON	3-3253	PROPERTY	70 FAYSTON ST.	WAIVER	WAV - 6	
BOSTON	3-3254	PROPERTY	246 TALBOT AVE.	L.T.B.I.	LTB - 19	

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BOSTON	3-3256	PROPERTY	55 BROOKLEY RD.	L.T.B.I.	LTB - 19	
BOSTON	3-3259	PROPERTY	670 HUNTINGTON AVE.	L.T.B.I.	LTB - 19	
BOSTON	3-3355	PROPERTY	100 SPRING ST.	L.T.B.I.	LTB - 19	
BOSTON	3-3366	PROPERTY	MARLBOROUGH ST, CLARENDON	L.T.B.I.	LTB - 19	
BOSTON	3-3512	PROPERTY	246 BORDER ST.	L.T.B.I.	LTB - 19	Yes
BOSTON	3-2028	PRUDENTIAL METAL SUPPLY	40 SPRAGUE ST.	L.T.B.I.	LTB - 19	
BOSTON	3-0182	PURITAN MALL	741 WM. T. MORRISSEY BLVD	L.T.B.I.	LTB - 19	
BOSTON	3-0764	R & S MACHINE CO.	137-173A WALNUT ST.	L.T.B.I.	LTB - 19	
BOSTON	3-0787	R&R BATTISTA	33 HICHBORN ST.	L.T.B.I.	LTB - 19	
BOSTON	3-0252	RECORDING & STATISTICAL CO.	55 WM. T. MORRISSEY BLVD	REMEDIAL	REM - 4	
BOSTON	3-3415	RESIDENTIAL PROPERTY	15 CORTEZ ST.	WAIVER	WAV - 6	
BOSTON	3-2825	ROTHMAN & HEINMAN	711 ATLANTIC AVE.	L.T.B.I.	LTB - 19	
BOSTON	3-2109	ROXBURY STATION	ROXBURY ST. & SHAWMUT	L.T.B.I.	LTB - 19	
BOSTON	3-2910	RYAN FIELD	RYAN FIELD,ALFORD ST.	L.T.B.I.	LTB - 19	
BOSTON	3-2401	RYDER TRUCK RENTAL	280 W. FIRST ST.	L.T.B.I.	LTB - 19	
BOSTON	3-2332	RYERSON STEEL	60 EVERETT ST.	L.T.B.I.	LTB - 19	
BOSTON	3-1633	S.W. DUNN STORAGE CO.	3165 WASHINGTON ST.	L.T.B.I.	LTB - 19	
BOSTON	3-1601	SAFE-N-SOUND	100 SOUTHAMPTON ST.	WAIVER	WAV - 6	
BOSTON	3-1639	SAFETY PROJECTS & ENG.	MASS BAY FOUL AREA HARBOR	L.T.B.I.	LTB - 19	
BOSTON	3-1575	SAVIN HILL STATION	1104-1112 DORCHESTER AVE.	WAIVER	WAV - 6	
BOSTON	3-3407	SEARS DEPT. STORE	115 CAMBRIDGE ST.	L.T.B.I.	LTB - 19	
BOSTON	3-2949	SEARS ROEBUCK CO.	201 BROOKLINE AVE.	CONFIRMED	CON - 35	
BOSTON	3-2287	SEARS STORE	100 ALLSTATE RD.	WAIVER	WAV - 6	
BOSTON	3-2899	SERVICE SALES CORP.	442 CAMBRIDGE ST.	WAIVER	WAV - 6	

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BOSTON	3-1797	SHAWMUT DESIGN & CONSTRUCT.	173A NORFOLK AVE.	L.T.B.I.	LTB - 19	
BOSTON	3-1947	SHELL SERVICE STATION	10-22 NORTHAMPTON ST.	L.T.B.I.	LTB - 19	
BOSTON	3-2023	SHELL SERVICE STATION	82 RIVER ST.	WAIVER	WAV - 6	
BOSTON	3-2687	SHELL SERVICE STATION	150 SOUTHAMPTON ST.	CONFIRMED	CON - 35	
BOSTON	3-1906	SHELL STATION	53 MERIDIAN ST.	L.T.B.I.	LTB - 19	
BOSTON	3-3219	SHELL STATION	510 V.F.W. PARKWAY	L.T.B.I.	LTB - 19	
BOSTON	3-3328	SHELL STATION	761 ADAMS ST.	L.T.B.I.	LTB - 19	
BOSTON	3-0738	SIMMONS COLLEGE	BROOKLINE AVE.	L.T.B.I.	LTB - 20	
BOSTON	3-3180	SNOW METER TEST PIT #10	LOGAN AIRPORT	L.T.B.I.	LTB - 20	
BOSTON	3-0952	SOUTH BAY INCINERATOR	OFF S.E. EXPRESSWAY	L.T.B.I.	LTB - 20	
BOSTON	3-1918	SOUTH POSTAL ANNEX	135 A ST.	L.T.B.I.	LTB - 20	
BOSTON	3-0555	SOUTH STATION FOUNDATION	SUMMER ST.	CONFIRMED	CON - 36	
BOSTON	3-1993	SOUTH STATION TERMINAL	SUMMER ST.	L.T.B.I.	LTB - 20	
BOSTON	3-0739	SOUTHWEST CORRIDOR PARCEL18	TREMONT & RUGGLES ST.	WAIVER	WAV - 6	
BOSTON	3-0962	ST. STEPHEN'S WAY	357 E.EIGHTH ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2930	STANDFORD UNIFORM CO.	401 MOUNT VERNON ST.	L.T.B.I.	LTB - 20	
BOSTON	3-3535	STOP & SHOP	1025 TRUMAN HIGHWAY	L.T.B.I.	LTB - 20	Yes
BOSTON	3-3119	STOP AND GAS	4334 WASHINGTON ST.	L.T.B.I.	LTB - 20	
BOSTON	3-3448	STORE 24	1886 DORCHESTER AVE.	L.T.B.I.	LTB - 20	
BOSTON	3-1184	SUBURBAN AUTO ELECTRIC	625 HYDE PARK AVE.	L.T.B.I.	LTB - 20	
BOSTON	3-1976	SUMMERFIELD FURNITURE	33 TRAVELER ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2719	SUNOCO	173 SPRING ST.	L.T.B.I.	LTB - 20	
BOSTON	3-1956	SUNOCO STATION	1250 BOYLSTON ST.	CONFIRMED	CON - 36	
BOSTON	3-0885	SUNOCO STATION	120 MOUNTFORT ST.	L.T.B.I.	LTB - 20	

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BOSTON	3-0506	SUNSHINE LAUNDRY	40 RUGG RD.	L.T.B.I.	LTB - 20	
BOSTON	3-1406	T.F. KINNEALEY CO.	20 NEW MARKET ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2782	TERADYNE	321 HARRISON AVE.	L.T.B.I.	LTB - 20	
BOSTON	3-0249	TEXACO	525 CENTER ST.	CONFIRMED	CON - 36	
BOSTON	3-0257	TEXACO INC./SO.BOSTON TRML	900 E. FIRST ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2132	TEXACO SERVICE STATION	1241 BOYLSTON ST.	WAIVER	WAV - 6	
BOSTON	3-1187	TEXACO SERVICE STATION	601 COMMONWEALTH AVE.	L.T.B.I.	LTB - 20	
BOSTON	3-2972	THOMPSON IS. OUTWARD BOUND	THOMPSON ISLAND	L.T.B.I.	LTB - 20	
BOSTON	3-1497	TRUESDALE CO.	108 HOLTON ST.	L.T.B.I.	LTB - 20	
BOSTON	3-0157	U-HAUL	1550 VFW PKWY	WAIVER	WAV - 6	
BOSTON	3-2169	U. S. NAVY	BOSTON NAVAL SHIPYARD	REMEDIAL	REM - 4	
BOSTON	3-2447	U.S. ARMY RESERVE CENTER	495 E. ST.	L.T.B.I.	LTB - 20	
BOSTON	3-1373	UNIFIRST CORP.	80 EAST COTTAGE ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2615	UNITED TRUCK LEASING	100 SOUTHAMPTON ST.	L.T.B.I.	LTB - 20	
BOSTON	3-2666	UNIVERSITY PARK	28 TRAVIS ST.	L.T.B.I.	LTB - 21	
BOSTON	3-1939	UPTOWN GARAGE	10 GAINSBOROUGH ST.	L.T.B.I.	LTB - 21	
BOSTON	3-0664	USCG SUPPORT CENTER	455-467 COMMERCIAL ST.	L.T.B.I.	LTB - 21	
BOSTON	3-2342	WAGNER ELECTRICAL CORP.	145 N. BEACON ST.	WAIVER	WAV - 6	
BOSTON	3-0253	WALDO BROTHERS	35 HARRISON ST.	REMEDIAL	REM - 4	
BOSTON	3-1904	WAREHOUSE	879 BLUE HILL AVE.	L.T.B.I.	LTB - 21	
BOSTON	3-0736	WENTWORTH INS. OF TECH.	HUNTINGTON AVE.	L.T.B.I.	LTB - 21	
BOSTON	3-0258	WHITE FUELS	WEST SECOND ST./C ST.	L.T.B.I.	LTB - 21	
BOSTON	3-0040	WHITMORE WRIGHT	62 ALFORD ST.	L.T.B.I.	LTB - 21	
BOURNE	4-0335	BOURNE EXXON STATION	RTE 6 ROTARY	CONFIRMED	CON - 36	

GZA

APPENDIX D

BORING LOGS

* * * DRAFT * * *

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-1
Page 1 of 2
File No. 12547
Chkd. By: FMG

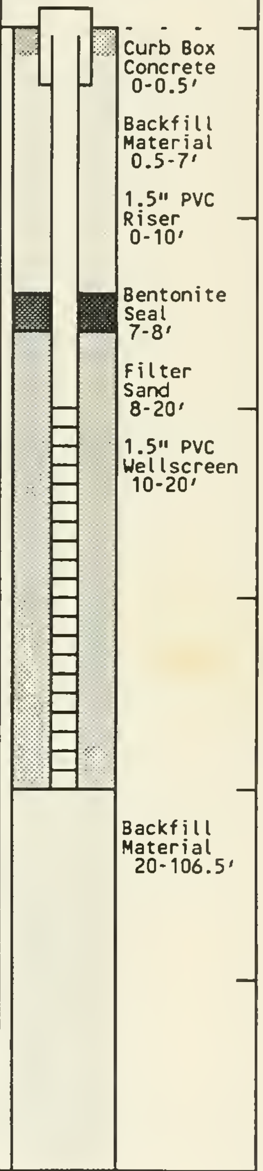
			Casing	Sampler
oring Co.	GZA Drilling, Inc.			
oreman	C. Lenling/P.Brown	Type	HW/NW	Split Spoon
ZA Rep.	M.A. Ponti, Jr./ck	I.D./O.D.	4"/3"	2"
ate Start 6/28/91	End 6/28/91	Hammer Wt.	300#	140#
ocation	See Exploration Location Plan	Hammer Fall	24"	30"
S.Elev.	Datum	Other	3-3/4" Hollow Stem Auger	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/28/91	1330	11.5'	20	0 Hrs.

DEPTH	CSNG	BLWS	No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
			S-1	24/17	0-2	9-11	ND	Medium dense, gray, fine to coarse SAND, little(+) Gravel, little(+) Silt (concrete FILL).	2" ASPHALT	
						14-13				
									GRANULAR FILL	
5			S-2	24/13	5-7	2-3	ND	Very loose, olive-brown, fine to coarse SAND, some(+) Silt, trace(-) Clay (FILL).		
						1-1				
									± 8.5'	
10			S-3	24/22	10-12	2-7	ND	Very stiff olive-brown SILT and CLAY (wet).	SILT AND CLAY	
						12-14				
									± 13.5'	
15			S-4	24/24	15-17	6-5	ND	Stiff, gray, Silty CLAY (moist, highly plastic).		
						9-12				
20			S-5	24/24	20-22	2-4	ND	Stiff, gray, Silty CLAY (moist, highly plastic).	GRAY SILTY CLAY	
					20-22	6-6				
25			S-6	24/24	25-27	6-6		Stiff, gray, Silty CLAY (moist, highly plastic).		
						6-9				

Equipment Installed



Remarks

1. H-Nu readings represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an H-Nu Model PI-101 photoionization analyzer. Results in parts per million (ppm). ND indicates nothing detected. N indicates negative deflection of the water and may be due to high concentrations of non-ionizable species such as methane, carbon dioxide or moisture. Testing performed at GZA's Newton laboratory.

tratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level eadings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors ther than those present at the time measurements were made.

Boring No. GZA-1

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-1
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information					Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data				
			S-7	24/24	30-32	4-5	ND	Stiff, gray, Silty CLAY.	GRAY SILTY CLAY		Backfill Material 20-32'
						6-6					
								Bottom of Boring at 32 Feet.			
35											
40											
45											
50											
55											
60											

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-1

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
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(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-2
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File No. 12547
Chkd. By: FMG

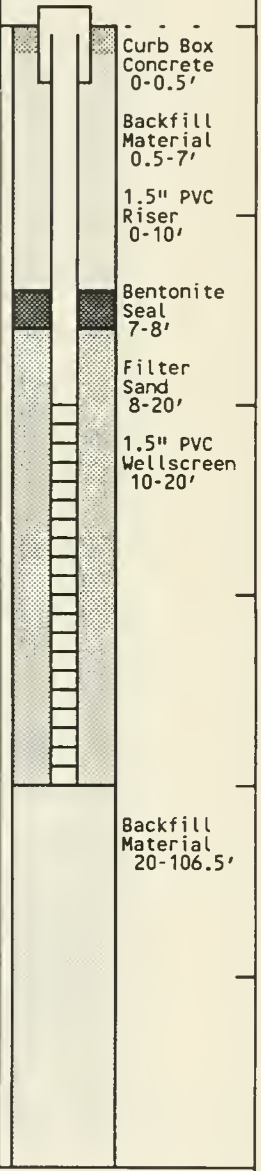
Boring Co.	GZA Drilling, Inc.		**Casing**	**Sampler**
Foreman	C. Lenling/P.Brown	Type	HW/NW	Split Spoon
GZA Rep.	M.A. Ponti, Jr./ck	I.D./O.D.	4"/3"	2"
Date Start	6/28/91 End 6/28/91	Hammer Wt.	300#	140#
Location	See Exploration Location Plan	Hammer Fall	24"	30"
GS.Elev.	Datum	Other	3-3/4" Hollow Stem Auger	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/19/91	1000	12′	15′	0 Hrs.

DEPTH	CSNG	BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
			S-1	24/17	0-2	5-4	ND	Medium dense, black, fine to coarse SAND, some(+) Silt, little(+) Gravel Brick (FILL).	2" ASPHALT	
						7-8				
5			S-2	24/15	5-7	11-12	0.7	Medium dense, black, fine to coarse SAND, some(+) Silt, little(+) Gravel Brick (FILL).	GRANULAR FILL	
						17-21				
10			S-3	24/15	10-12	11-18	0.9	Dense, olive brown, fine to coarse SAND, some(+) Gravel, little(+) Silt and Clay, Brick (Fill) (wet).		
						23-6				
									± 13.5′	
15			S-4	24/21	15-17	14-15	ND	Hard, olive brown, SILT and CLAY (moist).	SILT AND CLAY	
						13-17				
20			S-5	24/14	20-22	31-30	2.8	Hard, olive brown, SILT and CLAY (moist).		
						32-44				
									± 23.5′	
25			S-6	24/19	25-27	3-4	ND	Medium stiff, gray, Silty CLAY (moist).	GRAY SILTY CLAY	
						4-5				

Equipment Installed



Remarks

1. See Note 1 on Boring Log GZA-1.
2. See Note 2 on Boring Log GZA-1.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-2
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-7	24/22	30-32	2-2	ND	Medium stiff, gray, Silty CLAY, little(+) Silt and fine Sand laminae layers (moist).			
						5-4					
35			S-8	24/24	35-37	3-2	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).			
						4-5					
40			T-1	24/22	40-42	300 psi push					
			S-9	24/23	42-44	4-3	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).			
						3-6					
45											
50			T-2	24/12	50-52	300 psi push					
			S-10	24/24	52-54	2-4	ND	Stiff, gray, Silty CLAY, little(+) Silt and fine Sand layers/laminae.			
						6-7					
55											
60			T-3	24/19	60-62	300 psi push					
			S-11	24/22	62-64	5-6	ND	Stiff, gray, Silty CLAY, trace(-) fine to medium Sand.			
						7-10					

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-2

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-2
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
70			T-4	24/21	70-72	300 psi push			GRAY SILTY CLAY		
			S-12	24/23	72-74	WOR-4	ND	Stiff, gray, Silty CLAY, trace(-) fine to coarse Sand (moist).		3.	
						5-4					
75											
									± 78'	4.	
80			S-13	24/13	80-82	16-17	0.1	Dense, gray, fine to coarse SAND, some(+) Silt and Clay (wet).	GLACIAL TILL		
						16-18					
85			S-14	24/14	85-87	27-38	ND				
						47-64					
									± 90'		
90			S-15	0/0	90-90	38/0"		No Recovery.	ARGILLITE BEDROCK		
			R-1	60/18	92.5-97.5	3					
						3-5					
						4					
95						4					
						5					
			R-2		97.5-102.5	4	RQD=57	Hard, freshly weathered, slightly fractured, dark gray, amorphous; ARGILLITE; close, moderately dipping drilling breaks along thin bedding planes (parallel and perpendicular			
						5.3					
						5.1					

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-2
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
						5.3		to bedding); occasional calcite fillings parallel and perpendicular to bedding.			
						5.5					
			R-3	48/48	102.5-103.5	4.1	RQD=100	Hard, freshly weathered, slightly fractured, dark gray amorphous ARGILLITE, close, moderately dipping, drilling breaks along thin bedding planes (parallel and perpendicular to bedding); occasional calcite fillings parallel and perpendicular to bedding.	ARGILLITE BEDROCK		
					103.5-104.5	5.2					
					104.5-105.5	5.5					
105					105.5-106.5	5.5					
								Bottom of Boring at 106.5 Feet.			
110											
115											
120											
125											
130											

Remarks

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Boring No. GZA-2

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-3
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File No. 12547
Chkd. By: FMG

Boring Co.	GZA Drilling, Inc.		Casing	Sampler	
Foreman	C. Lenling/P.Brown	Type	HW/NW	Split Spoon	
GZA Rep.	M.A. Ponti, Jr./ck	I.D./O.D.	4"/3"	2"	
Date Start	6/28/91 End 6/28/91	Hammer Wt.	300#	140#	
Location	See Exploration Location Plan	Hammer Fall	24"	30"	
GS.Elev.	Datum	Other	3-3/4" Hollow Stem Auger		

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/28/91	1330	11.5'	20	0 Hrs.

DEPTH	CSNG	BLWS	Sample Information No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-1	24/18	0-2	3-7	ND	Medium dense, gray-black, fine to coarse SAND, some(-) Gravel, little (+) Silt, Brick, (FILL).	2" ASPHALT	1.	No Equipment Installed
						5-5					
									GRANULAR FILL		
5			S-2	24/17	5-7	6-6	ND	Medium dense, dark brown, fine to coarse SAND, some(+) Silt, little(+) Gravel, Brick, (FILL).			
						8-10					
									± 9'		
10			S-3	24/19	10-12	4-9	ND	Very stiff, olive-brown, SILT and CLAY, little(-) fine Sand, trace(+) Gravel (wet, plastic).	SILT AND CLAY		
						8-12					
									± 13.5'		Backfill Material 0-73.1'
15			S-4	24/16	15-17	2-4	NO	Medium stiff, gray Silty CLAY, trace(-) fine Sand and Silt partings (moist, highly plastic).			
						4-5					
									GRAY SILTY CLAY		
20			S-5	24/24	·20-22	5-7	ND	Very stiff, gray, Silty CLAY, trace (-) fine Sand and Silt partings (moist, highly plastic).			
						10-9					
25			S-6	24/24	25-27	3-5	ND	Stiff, gray, Silty CLAY (moist, highly plastic).			
						7-7					

Remarks

1. See Remark No. 1 on Boring Log GZA-1.
2. No samples taken between 37 and 73 feet below grade; observed gray washwater to 73 feet.
3. Used 3" HW casing to advance hole between 37 and 73 feet where casing could not advance any more; no coarse material (till) was observed within return water; Sample S-9 advanced to 73.1 feet to refusal, no sample was recovered.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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Chinatown/Boston, Massachusetts

Boring No. GZA-3
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-7	24/24	30-32	3-3	ND	Medium stiff, gray, Silty CLAY, little(-) fine Sand and Silt partings, (moist, highly plastic).			
						5-6					
35			S-8	24/24	35-37	2-2	ND	Medium stiff, gray, Silty CLAY, little(+) fine Sand and Silt partings (moist, highly plastic).			
						3-4					
										2.	
40								(No Samples Taken)			
45											Backfill Material 0-73.1'
									GRAY SILTY CLAY		
50											
55											
60											

Remarks

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-3
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information					Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data				
								No Samples Taken.	GRAY SILTY CLAY		Backfill Material 0-73.1'
70											
								No Recovery			
			S-9	1/1	73-73.1	120/1"	ND	Bottom of Boring at 73.1 Feet.		3.	
75											
80											
85											
90											
95											

Remarks

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-4
Page 1 of 3
File No. 12547
Chkd. By: FMG

Boring Co. GZA Drilling, Inc.
Foreman C. Lenling/P.Brown
GZA Rep. M.A. Ponti, Jr./ck
Date Start 6/24/91 End 6/26/91
Location See Exploration Location Plan
GS.Elev. Datum

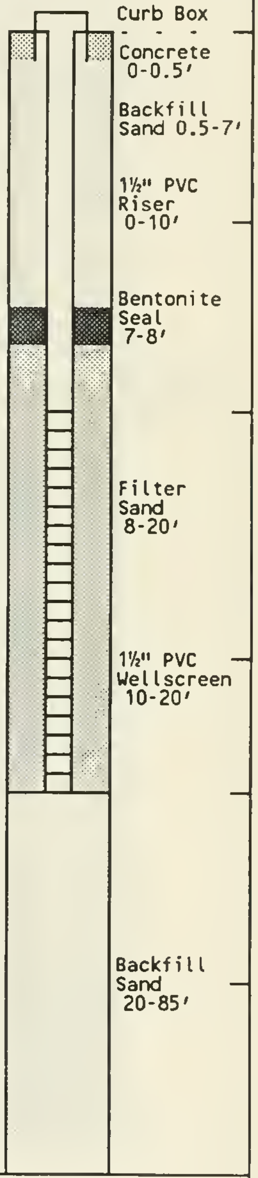
	Casing	Sampler
Type	HW/NW	Split Spoon
I.D./O.D.	4"/3"	2"
Hammer Wt.	300#	140#
Hammer Fall	24"	30"
Other	3-3/4" HSA; NX Split Barrel	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/24/91	1400	11.5'	15'	0 Hrs.

DEPTH	CSNG BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
		S-1	24/15	0-2	11-14 17-19	3.7	Dense, brown, fine to medium SAND, little(+) Silt, trace(+) fine Gravel.	2' ASPHALT	
5		S-2	24/24	5-7	15-6 5-10	6.0	Medium dense, brown, fine to medium SAND, some (-) fine Gravel, little (-) Silt, trace Brick.	GRANULAR FILL 10'	
10		S-3	24/24	10-12	2-3 3-5	ND	Loose, gray-brown, fine SAND and SILT.	SAND 15'	
15		S-4	24/24	15-17	6-5 6-8	ND	Stiff, gray CLAY and SILT, trace black organic Silt, fine Gravel.	CLAY AND SILT	
20		S-5	24/24	20-22	13-19 21-27	ND	Hard, yellow CLAY and SILT, trace fine Sand.	± 22.5'	
		S-6	24/16	23-25	3-4 5-7	ND	Stiff, gray, Silty CLAY, occasional fine Sand and Silt parting.	GRAY SILTY CLAY	
25									
		S-7	24/22	28-30	3-5 3-6	ND	Medium stiff, gray, Silty CLAY, many fine Sand and Silt partings (moist).		

Equipment Installed



Remarks

1. See Remark No. 1 on Boring Log GZA-1.
2. Locking curb box installed with concrete at ground surface.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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Chinatown/Boston, Massachusetts

Boring No. GZA-4
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Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
									31.5' ±		
			S-8	24/20	33-35	3-3	ND	Medium stiff, olive-gray CLAY and SILT, many fine Sand and Silt partings. One fine Sand seam 3" from tip measured 1/8" (moist).			
35						4-5					
			S-9	24/20	38-40	2-4	ND	Top 12": Stiff, gray CLAY and SILT, occasional fine Sand and Silt partings. Bottom 8": Medium dense, gray, fine SAND and Clayey SILT (moist).			
40			S-9A			5-6	ND				
			S-10	24/22	43-45	4-4	ND	Stiff, gray CLAY and SILT, trace (-) fine Gravel, occasional fine Sand and Silt partings (moist).			
45						6-7			GRAY CLAY AND SILT		Backfill Material 20-85'
			S-11	24/24	48-50	3-5	ND	Stiff, gray CLAY and SILT, trace (-) fine to coarse Sand, fine Gravel (moist).			
50						5-6					
									51.5' ±		
			S-12	24/24	53-55	3-5	ND	Stiff, gray, Silty CLAY, trace (-) fine Gravel (moist).			
55						5-6					
			S-13	24/24	58-60	WOR-WOR	ND	Soft, gray, Silty CLAY (moist).	GRAY SILTY CLAY		
60						3-4					
			S-14	24/24	63-65	WOR-WOR	ND	Soft, olive-gray, Silty CLAY (moist).			
						4-5					

Remarks

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-4
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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-15	24/24	68-70	WOR-WOR	ND	Soft, olive-gray, Silty CLAY (moist).	GRAY SILTY CLAY		Backfill Material 20-85'
						1-1					
70								Driller noted change at 71 feet.	71'		
			S-16	24/12	73-75	9-14	ND	Dense, gray, fine to coarse SAND and fine GRAVEL, little (+) Clayey Silt.	GLACIAL TILL		
						22-51			75'		
75			C-1	60/51	75-80	3	RQD=70	Hard, freshly weathered, slightly fractured dark gray ARGILLITE; close-moderately close drilling breaks along moderately dipping bedding planes; occasional calcite fillings parallel-perpendicular to bedding planes.	ARGILLITE BEDROCK		
						3-5					
						4					
						4-2					
						4-5					
80			C-2	60/52	80-85	4-2	RQD=75	Hard, freshly weathered, slightly fractured dark gray ARGILLITE; close-moderately close drilling breaks along moderately dipping bedding planes; occasional calcite fillings parallel-perpendicular to bedding planes.			
						5-0					
						4-5					
						4-2					
						4-0					
85								Bottom of Boring at 85 feet			
90											
95											

Remarks

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-5
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File No. 12547
Chkd. By: FMG

Boring Co. GZA Drilling, Inc.
Foreman C. Lenling/P.Brown
GZA Rep. M.A. Ponti, Jr./ck
Date Start 6/29/91 End 6/29/91
Location See Exploration Location Plan
GS.Elev. Datum

	Casing	Sampler
Type	----	Split Spoon
I.D./O.D.	----	2"
Hammer Wt.	----	140#
Hammer Fall	----	30"

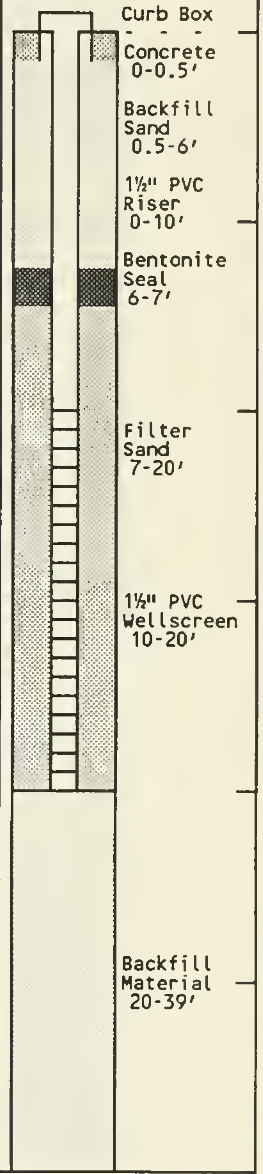
Other 3-3/4" Hollow Stem Auger

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/29/91	1330	11.5'	35'	0 Hours
7/2/91	0715		Out	± 1.3 Days

DEPTH	CSNG	BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
			S-1	24/16	0-2	9-15 6-10	ND	Medium dense, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel Brick (FILL).	2" ASPHALT	1. 2.
5			S-2	24/17	5-7	7-7 11-13	ND	Medium dense, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel Brick (FILL).	GRANULAR FILL	3.
10			S-3	24/24	10-12	3-2 2-6	8.2	Medium stiff, gray, Silty CLAY, trace (+) black organics, Wood, (moist, highly plastic).		
									13.5' ±	
15			S-4	24/	15-17	5-5 7-3	ND	Stiff, gray, Silty CLAY, trace (+) fine Sand and Silt partings (moist, highly plastic).		
20			S-5	24/24	20-22	3-4 4-4	ND	Stiff, gray, Silty CLAY (moist, highly plastic).	GRAY SILTY CLAY	
25			T-1	24/24	25-27	300 psi				
			S-6	24/24	27-29	3-5 4-6	ND	Stiff, gray, Silty CLAY, little (+) fine Sand and Silt partings (moist, plastic).		

Equipment Installed



Remarks

1. See Remark No. 1 on Boring Log GZA-1.
2. Locking curb box installed with concrete at ground surface.
3. Encountered obstruction between ± 7.5 and ± 9.8 feet below grade.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-5

GZA GEOENVIRONMENTAL, INC.
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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-5
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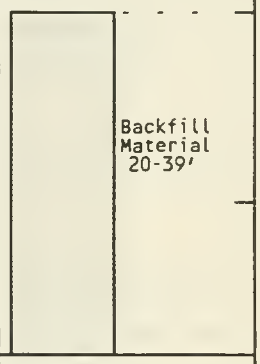
File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
									GRAY SILTY CLAY	
35			T-2	24/19	35-37	300 psi				
			S-7	24/24	37-39	2-5 4-4	ND	Stiff, gray, Silty CLAY, little (-) fine Sand and Silt partings (moist, plastic).		
40								Bottom of Boring at 39 feet		
45										
50										
55										
60										

Equipment Installed



Remarks

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Boring No. GZA-5

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-6
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File No. 12547
Chkd. By: FMG

Boring Co. GZA Drilling, Inc.
Foreman C. Lenling/P.Brown
GZA Rep. M.A. Ponti, Jr./ck
Date Start 6/29/91 End 6/29/91
Location See Exploration Location Plan
GS.Elev. Datum

	Casing	Sampler
Type	----	Split Spoon
I.D./O.D.	----	2"
Hammer Wt.	----	140#
Hammer Fall	----	30"
Other	3-3/4" Hollow Stem Auger	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/29/91	0920	10.9'	20'	0 Hours

DEPTH	CSNG BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
		S-1	24/14	0-2	10-5	ND	Loose, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel (Brick, Asphalt, FILL).	2" ASPHALT		No Equipment Installed
					4-4					
5		S-2	24/14	5-7	6-11	ND	Medium dense, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel, trace (-) Clay, Brick (FILL).	GRANULAR FILL		
					12-9					
10		S-3	24/21	10-12	8-9	ND	Very stiff, olive-brown SILT and CLAY, little (+) fine to coarse Sand, Brick, Asphalt (FILL).			
					9-11					
								± 13.5'		
15		S-4	24/23	15-17	7-10	ND	Very stiff, olive-brown SILT and CLAY, little (-) fine Sand (moist).	SILT AND CLAY		Backfill Material 0-32'
					8-12					
								± 18.5'		
20		S-5	24/24	20-22	2-3	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).			
					4-4					
25		S-6	24/24	25-27	1-4	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).	GRAY SILTY CLAY		
					3-6					

Remarks

1. See Remark No. 1 on Boring Log GZA-1.

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File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information					Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data				No Equipment Installed
			S-7	24/24	30-32	2-2 4-4	ND	Medium stiff, gray Silty CLAY, little (-) fine Sand and Silt partings (moist, highly plastic).	GRAY SILT CLAY		Backfill Material 0-32'
								Bottom of Boring at 32 feet			
35											
40											
45											
50											
55											
60											

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-6

GZA GeoEnvironmental, Inc.
Engineers/Scientists

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CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-7
Page 1 of 2
File No. 12547
Chkd. By: FMG

Boring Co. GZA Drilling, Inc.
Foreman C. Lenling/P.Brown
GZA Rep. M.A. Ponti, Jr./ck
Date Start 6/22/91 End 6/22/91
Location See Exploration Location Plan
GS.Elev. Datum

	Casing	Sampler
Type	----	Split Spoon
I.D./O.D.	----	2"
Hammer Wt.	----	140#
Hammer Fall	----	30"
Other	3-3/4" Hollow Stem Auger	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/22/91	0930	11.1'	20'	0 Hours

DEPTH	CSNG	BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-1	24/17	0-2	8-6	ND	Medium dense, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel (Brick, FILL).		1.	No Equipment Installed
						5-9					
5			S-2	24/11	5-7	26-38	0.6	Very dense, brown-gray, fine to coarse SAND, little (+) Silt, little (+) Gravel (Brick, Concrete, FILL).	GRANULAR FILL		
						43-87					
10			S-3	24/13	10-12	42-26	0.6	Dense, brown, fine to coarse SAND, some (+) Silt, little (+) Gravel (Wood, Brick, FILL).			
						20-13					
									± 13.5'		
15			S-4	24/15	15-17	9-1	ND	Soft, olive-brown and gray, Silty CLAY, little (+) fine Sand and Silt partings, lenses (moist, medium plastic).			Backfill Material 0-32'
						1-4					
20			S-5	24/22	20-22	3-4	0.8	Stiff, olive-gray, Silty CLAY, trace (-) fine to coarse Sand (Wood, wet).	GRAY SILTY CLAY		
						5-7					
25			S-6	24/24	25-27	2-3	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).			
						3-3					

Remarks

1. Refer to Remark No. 1 on Boring Log GZA-1.

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(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-7
Page 2 of 2
File No. 12547
Chkd. By: FMG

DPTH	CSNG	BLWS	Sample Information					Sample	Stratum	RMKS	Equipment Installed
			No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Description & Classification	Description		
			S-7	24/24	30-32	2-3	ND	Medium stiff, gray, Silty CLAY (moist, highly plastic).			▨ Backfill Material 0-32'
						4-6					
								Bottom of boring at 32 feet			
35											
40											
45											
50											
55											
60											

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-7

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-8
Page 1 of 2
File No. 12547
Chkd. By: FMG

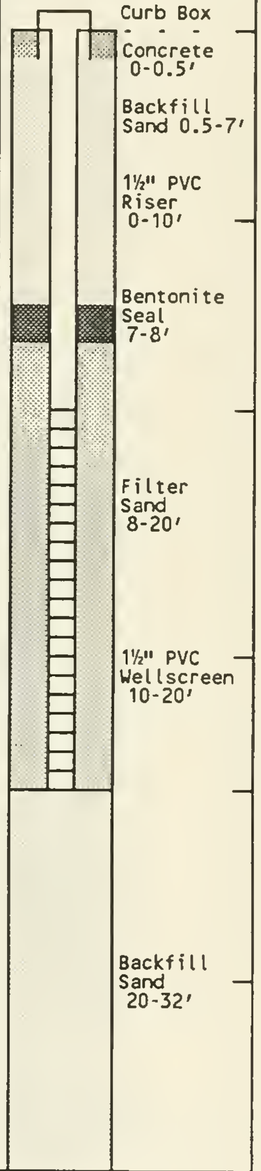
			Casing	Sampler
Boring Co.	GZA Drilling, Inc.			
Foreman	C. Lenling/P.Brown	Type	----	Split Spoon
GZA Rep.	M.A. Ponti, Jr./ck	I.D./O.D.	----	2"
Date Start	6/22/91 End 6/22/91	Hammer Wt.	----	140#
Location	See Exploration Location Plan	Hammer Fall	----	30"
GS.Elev.	Datum	Other	3-3/4" Hollow Stem Auger	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
6/22/91	1300	10.8′	Out	0 Hours
7/2/91	0800	9.78′	Out	± 10 Days

DEPTH	CSNG	BLWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	HNu Test Data	Sample Description & Classification	Stratum Description	RMKS
			S-1	24/15	0-2	9-14	1.8	Dense, dark brown, fine to coarse SAND, some (-) Silt (Brick, FILL).		1. 2.
						18-13				
5			S-2	24/16	5-7	16-21	ND	Dense, dark brown, fine to coarse SAND, some (+) Silt, little (+) Gravel, Brick, Concrete (FILL).	GRANULAR FILL	
						16-12				
10			S-3	24/13	10-12	1-2	ND	Very soft, black, Organic SILT, little (+) fine to coarse Sand (FILL).		
						1-2				
									± 13.5′	
15			S-4	24/22	15-17	5-6	ND	Stiff, olive, brown-gray, Silty CLAY (moist, highly plastic).		
			S-4A			8-8		S-4A: Stiff, olive brown-gray, Silty CLAY, trace (-) Wood (moist, highly plastic).	OLIVE BROWN SILTY CLAY	
20			S-5	24/23	20-22	2-3	ND	Medium stiff, olive brown-gray, Silty CLAY (moist, highly plastic).		
						3-3				
									± 23.5′	
25			S-6	24/24	25-27	2-2	ND	Medium stiff, gray, Silty CLAY, little (+) fine Sand/Silt lenses/laminae (moist, highly plastic).	GRAY SILTY CLAY	
						4-6				

Equipment Installed



Remarks

1. See Remark No. 1 on Boring Log GZA-1.
2. Locking curb box installed with concrete at ground surface.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

CEDC - Parcel A

Chinatown/Boston, Massachusetts

Boring No. GZA-8
Page 2 of 2
File No. 12547
Chkd. By: FMG

DEPTH	CSNG	BLWS	Sample Information					Sample	Stratum	RMKS	Equipment Installed
			No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	HNu Test Data	Description & Classification	Description		
			S-7	24/24	30-32	4-5 5-6	ND	Stiff, gray, Silty CLAY, trace (+) fine Sand and Silt layers, lenses and partings.	GRAY SILTY CLAY		Backfill Material 20-32′
								Bottom of boring at 32 feet			
35											
40											
45											
50											
55											
60											

Remarks

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZA-8

GZA

APPENDIX E

GC CHEMICAL SCREENING PROCEDURES AND RESULTS

SOIL SAMPLES

* * * DRAFT * * *

JOB DESCRIPTION: ACC – PARCEL A – BOSTON, MA
JOB #: 12547.1
DATE SAMPLED: 6/19–29/91
DATE TESTED: 7/5/91

GZA GEOENVIRONMENTAL, INC.
320 NEEDHAM STREET
NEWTON UPPER FALLS, MA 02164
(617) 969–0050, x–289
LAB I.D. No.: MA092

GZA GC SCREENING FOR VOLATILE ORGANICS IN SOILS
(CONCENTRATION – PPB, ug/kg of wet soil)

SAMPLE NAME: GZA LAB #:	Method Blank 06505-B	GZA–2 S–2 36505–S	GZA–2 S–3 36506–S	GZA–2 S–5 36507–S	GZA–2 S–13 36508–S	GZA–4 S–1 36509–S	METHOD DETECTION LIMIT
1. TETRACHLOROETHENE	ND	ND	ND	ND	ND	ND	20
2. TRICHLOROETHENE	ND	ND	ND	ND	ND	ND	10
3. 1,1-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	10
4. TOTAL 1,2-DICHLOROETHENES	ND	ND	ND	ND	ND	ND	10
5. METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	20
6. VINYL CHLORIDE	ND	ND	ND	ND	ND	ND	20
7. 1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	20
8. 1,1-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	10
9. 1,2-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	10
10. CHLOROETHANE	ND	ND	ND	ND	ND	ND	10
11. METHYL-t-BUTYL ETHER	ND	ND	ND	ND	ND	TRACE	10
12. BENZENE	ND	ND	ND	ND	ND	ND	10
13. TOLUENE	ND	ND	ND	ND	ND	ND	10
14. ETHYL BENZENE	ND	ND	ND	ND	ND	ND	10
15. m,p-XYLENES	ND	ND	ND	ND	ND	ND	20
16. o-XYLENE	ND	ND	ND	ND	ND	ND	20
17. ACETONE	ND	ND	ND	ND	ND	ND	10
18. METHYL ETHYL KETONE	ND	ND	ND	ND	ND	ND	10
19. METHYL ISOBUTYL KETONE	ND	ND	ND	ND	ND	ND	10
20. CHLOROFORM	ND	ND	ND	ND	ND	ND	40
21. FREON 113 (CCl3-CF3)	ND	ND	ND	ND	ND	ND	30
22. CHLOROBENZENE	ND	ND	ND	ND	ND	ND	20
23. STYRENE	ND	ND	ND	ND	ND	ND	30
TOTAL COMPOUNDS (1-23)	ND	ND	ND	ND	ND	TRACE	
METHANE (V/V-air, PPM)	ND	ND	ND	ND	ND	ND	10 PPM
UNKNOWNS (#)	ND	ND	ND	ND	ND	(17)	

COMMENTS: Results are reported with two (2) significant digits. The pattern of the chromatogram for sample GZA–4, S–1 indicates the presence of one or more unkown petroleum distillates such as a gasoline and/or a fuel oil.

ANALYZED BY
Julie Blackwell

REVIEWED BY
C W Pickering

JOB DESCRIPTION: ACC – PARCEL A – BOSTON, MA
JOB #: 12547.1
DATE SAMPLED: 6/19–29/91
DATE TESTED: 7/5/91

GZA GEOENVIRONMENTAL, INC.
320 NEEDHAM STREET
NEWTON UPPER FALLS, MA 02164
(617) 969–0050, x–289
LAB I.D. No.: MA092

GZA GC SCREENING FOR VOLATILE ORGANICS IN SOILS
(CONCENTRATION – PPB, ug/kg of wet soil)

SAMPLE NAME: GZA LAB #:	Method Blank 06505–B	GZA–4 S–2 36510–S	GZA–5 S–3 36511–S	GZA–7 S–2 36512–S	GZA–7 S–3 36513–S	GZA–7 S–5 36514–S	METHOD DETECTION LIMIT
1. TETRACHLOROETHENE	ND	ND	ND	ND	ND	ND	20
2. TRICHLOROETHENE	ND	ND	ND	ND	ND	ND	10
3. 1,1-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	10
4. TOTAL 1,2-DICHLOROETHENES	ND	ND	ND	ND	ND	ND	10
5. METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	20
6. VINYL CHLORIDE	ND	ND	ND	ND	ND	ND	20
7. 1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	20
8. 1,1-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	10
9. 1,2-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	10
10. CHLOROETHANE	ND	ND	ND	ND	ND	ND	10
11. METHYL-t-BUTYL ETHER	ND	ND	ND	ND	ND	ND	10
12. BENZENE	ND	ND	ND	ND	ND	ND	10
13. TOLUENE	ND	TRACE	ND	ND	ND	ND	10
14. ETHYL BENZENE	ND	TRACE	ND	ND	ND	ND	10
15. m,p-XYLENES	ND	TRACE	ND	ND	ND	ND	20
16. o-XYLENE	ND	TRACE	ND	ND	ND	ND	20
17. ACETONE	ND	ND	ND	ND	ND	ND	10
18. METHYL ETHYL KETONE	ND	ND	ND	ND	ND	ND	10
19. METHYL ISOBUTYL KETONE	ND	ND	ND	ND	ND	ND	10
20. CHLOROFORM	ND	ND	ND	ND	ND	ND	40
21. FREON 113 (CCl3-CF3)	ND	ND	ND	ND	ND	ND	30
22. CHLOROBENZENE	ND	ND	ND	ND	ND	ND	20
23. STYRENE	ND	ND	ND	ND	ND	ND	30
TOTAL COMPOUNDS (1-23)	ND	TRACE	ND	ND	ND	ND	
METHANE (V/V-air, PPM)	ND	ND	19	ND	ND	ND	10 PPM
UNKNOWNS (#)	ND	(10)	(3)	ND	(1)	(1)	

COMMENTS: Results are reported with two (2) significant digits. The pattern of the chromatogram for sample GZA–4, S–2 indicates the presence of one or more unkown petroleum distillates such as a gasoline and/or a fuel oil. Trace levels of three (3) late eluting, possibly semi–volatile, unknown compounds were detected in sample GZA–5, S–3. Trace levels of one (1) early eluting unknown compound, which can be tentatively identified as methanol, were detected in samples GZA–7, S–3; and GZA–7, S–5. Methanol is a laboratory artifact that is inherent to this method and is most likely not present in samples GZA–7, S–3; and GZA–7, S–5.

ANALYZED BY Julie Blackwell

REVIEWED BY CW Pickering

JOB DESCRIPTION: ACC - PARCEL A - BOSTON, MA
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/5/91

GZA GEOENVIRONMENTAL, INC.
320 NEEDHAM STREET
NEWTON UPPER FALLS, MA 02164
(617) 969-0050, x-289
LAB I.D. No.: MA092

GZA GC SCREENING FOR VOLATILE ORGANICS IN SOILS
(CONCENTRATION - PPB, ug/kg of wet soil)

SAMPLE NAME: GZA LAB #:	Method Blank 06515-B	GZA-8 S-1 36515-S					METHOD DETECTION LIMIT
1. TETRACHLOROETHENE	ND	ND					20
2. TRICHLOROETHENE	ND	ND					10
3. 1,1-DICHLOROETHENE	ND	ND					10
4. TOTAL 1,2-DICHLOROETHENES	ND	ND					10
5. METHYLENE CHLORIDE	ND	ND					20
6. VINYL CHLORIDE	ND	ND					20
7. 1,1,1-TRICHLOROETHANE	ND	ND					20
8. 1,1-DICHLOROETHANE	ND	ND					10
9. 1,2-DICHLOROETHANE	ND	ND					10
10. CHLOROETHANE	ND	ND					10
11. METHYL-t-BUTYL ETHER	ND	ND					10
12. BENZENE	ND	ND					10
13. TOLUENE	ND	ND					10
14. ETHYL BENZENE	ND	ND					10
15. m,p-XYLENES	ND	ND					20
16. o-XYLENE	ND	ND					20
17. ACETONE	ND	ND					10
18. METHYL ETHYL KETONE	ND	ND					10
19. METHYL ISOBUTYL KETONE	ND	ND					10
20. CHLOROFORM	ND	ND					40
21. FREON 113 (CCl3-CF3)	ND	ND					30
22. CHLOROBENZENE	ND	ND					20
23. STYRENE	ND	ND					30
TOTAL COMPOUNDS (1-23)	ND	ND					
METHANE (V/V-air, PPM)	ND	ND					10 PPM
UNKNOWNS (#)	ND	(7)					

COMMENTS: Results are reported with two (2) significant digits. Trace levels of seven (7) variously eluting unknown compounds were detected in sample GZA-8, S-1.

ANALYZED BY Julie Blackwell

REVIEWED BY CW Pickering

GZA RAPID VOLATILE ORGANIC SCREENING OF SOIL SAMPLES BY THE STATIC HEADSPACE TECHNIQUE

SAMPLE PREPARATION AND ANALYTICAL METHODOLOGY

OVERVIEW

The GZA rapid screening technique for volatile organics in soil estimates concentrations of these compounds from gaseous concentrations measured in air above the sample. The method measures concentrations of contaminants released from the soil samples into the headspace. This method has been developed by the GZA Environmental Chemistry Laboratory as a rapid, reasonably accurate and reliable, and cost effective screening of soil samples for volatile organics. However, this technique is not definitive and Is not an EPA approved analytical method.

METHODOLOGY

Soil samples taken in the field are placed In 250 ml glass jars with a teflon gasket lid. The samples are kept at 4 degrees C until the time of analysis. A 10 ml crimp top septum vial Is marked and tared with a crimp top on an analytical balance. A subsample of soil is added until all but a 2.5 ml volume of headspace remains. The vial cap is immediately crimped on and the weight of the vial and its contents is again measured to determine the weight of soil added. A 1.0 ml aliquot of headspace gas is withdrawn automatically by a Hewlett Packard 19395A headspace injector. The headspace sample is injected into the sample port of a HP 5890A gas chromatograph where the vapor is split within the injection port and distributed to two 30 meter X 530 micron fused silica capillary columns. Concentrations of eluting volatile organics are measured with dual flame ionization detectors and response data are acquired by a Nelson Analytical 760 Series Intelligent Interface. The chromatographic data are transmitted to an IBM AT personal computer and analyzed using the Nelson Analytical 2600 Series Chromatography Software. The information for the analytical report is entered manually onto a Lotus Symphony spreadsheet.

CALIBRATION

The response of the gas chromatograph is calibrated with external standards prepared for concentrations of 0.1, 1.0, and 10 ug/g (ppm) on a mass response basis and introduced into the chromatograph as headspace samples in the same manner as unknown soil samples. Sample peaks are identified by comparing their retention times from both columns to measured retention times of calibration standards for both columns. Qualitative comparisons are made between the two sets of test data for each sample. Sample peaks identified as known compounds are quantified according to response factors determined from calibration standards.

REPORT FORMAT

The method quantitation limit (MQL) for each compound is stated for every report with 95% certainty in an average chromatographic run. Concentrations measures in the range of 1 to 5 times the MQL are reported as "Trace". Concentrations less than the MQL may be identified as beneath the method quantitation limit (BMQL) in instances where the compound's presence is 95% certain in that particular chromatogram. The total concentration for all detected compounds for which a calibration has been made, except methane, is summarized in the row designated as "Total Compounds"; none detected, ND, is reported if no known peaks are found. Unidentifiable peaks are reported as "Present" and the number of unknown peaks are reported in parentheses. No unknown peaks detected is reported as "ND".

QUALITY CONTROL

The GZA procedure assumes that response factors are constant over the working range of 10 ppb to 10 ppm and that the precision of the analysis for samples is the same as that for the calibration standards. The 95% confidence limits for a measurement are defined as plus or minus two standard deviations as determined by a Student's t Test on replicate analyses of calibration standards. Quality control standards are analyzed daily and accepted if the relative standard deviation of the response factor is less than 20% of the anticipated value. New calibration curves are prepared when quality control limits are exceeded. Method blanks are prepared in the same manner as samples and are analyzed before each job or no less frequently than every ten samples. Field blanks and trip blanks are submitted at the discretion of the sample submitter. Matrix spikes and duplicate analyses are performed at a frequency of not less than one per twenty or fewer samples and results are reported as matrix spike recoveries and percent differences. Analytical results are not blank corrected.

DISCLAIMER

Identities and concentrations of volatile organic compounds reported by this headspace screening technique are subject to limitations inherent to this method. Chromatographic data are quantified by response factors that assume 100% volatilization of sorbed organic compounds into the headspace. Therefore, the reported concentrations probaby represent the lower limits of contamination. If confirmation is desired, duplicate samples should be submitted to a State certified laboratory for analysis by the appropriate EPA protocol methods.

LABORATORY SAMPLE NOTATION:

S - Solid B - Blank

LABORATORY CONTACT PERSON:

Edward W. Pickering, Manager
Environmental Chemistry Laboratory
GZA GeoEnvironmental, Inc.
Massachusetts Laboratory I.D. No. MA092
Phone #: (617) 969–0050, x169

REFERENCES

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1/91/DM

GZA GEOENVIRONMENTAL, INC.
ENVIRONMENTAL CHEMISTRY LABORATORY
320 NEEDHAM STREET, NEWTON UPPER FALLS, MA 02164 (617) 969-0050
MASSACHUSETTS LABORATORY I.D. NO. MA092

GZA GAS CHROMATOGRAPHIC SCREENING FOR VOLATILE ORGANICS IN AQUEOUS AND/OR SOLID MATRIX

QUALITY CONTROL

DATE: 7/5/91

AQUEOUS

COMPOUNDS	MATRIX SPIKE RECOVERY (%)	ACCEPTANCE LIMITS (%)	DUPLICATE SPIKE PERCENT DIFFERENCE (%)	ACCEPTANCE LIMITS (%)
Trichloroethene	85.1	70–130	1.0	35
Toluene	84.2	70–130	.3	35

SOLID

COMPOUNDS	MATRIX SPIKE RECOVERY (%)	ACCEPTANCE LIMITS (%)	DUPLICATE SPIKE PERCENT DIFFERENCE (%)	ACCEPTANCE LIMITS (%)
Trichloroethene	---	70–130	---	35
Toluene	---	70–130	---	35

GZA

APPENDIX F

GC SCREENING RESULTS AND PROCEDURES

GROUNDWATER SAMPLES

* * * DRAFT * * *

JOB DESCRIPTION: ACC - PARCEL A - BOSTON, MA
JOB #: 12547.1
DATE SAMPLED: 6/25/91 - 7/2/91
DATE TESTED: 7/2/91

GZA GEOENVIRONMENTAL, INC.
320 NEEDHAM STREET
NEWTON UPPER FALLS, MA 02164
(617) 969-0050, x-289
LAB I.D. No.: MA092

GZA GC SCREENING FOR VOLATILE ORGANICS IN WATER
(CONCENTRATION - PPB, ug/l)

SAMPLE NAME: GZA LAB #:	Method Blank 06476-B	GZA-1 36476-A	GZA-2 36477-A	GZA-4 36478-A	GZA-5 36479-A		METHOD DETECTION LIMIT
1. TETRACHLOROETHENE	ND	ND	ND	ND	ND		10
2. TRICHLOROETHENE	ND	ND	ND	ND	ND		10
3. 1,1-DICHLOROETHENE	ND	ND	ND	ND	ND		10
4. TOTAL 1,2-DICHLOROETHENES	ND	ND	ND	ND	ND		10
5. VINYL CHLORIDE	ND	ND	ND	ND	ND		10
6. METHYLENE CHLORIDE	ND	ND	ND	ND	ND		50
7. 1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND		10
8. 1,1-DICHLOROETHANE	ND	ND	ND	ND	ND		10
9. 1,2-DICHLOROETHANE	ND	ND	ND	ND	ND		50
10. CHLOROETHANE	ND	ND	ND	ND	ND		10
11. METHYL-t-BUTYL ETHER	ND	ND	ND	ND	ND		30
12. BENZENE	ND	ND	ND	ND	ND		5.0
13. TOLUENE	ND	ND	ND	ND	ND		5.0
14. ETHYL BENZENE	ND	ND	ND	ND	ND		5.0
15. m,p-XYLENES	ND	ND	ND	ND	ND		5.0
16. o-XYLENE	ND	ND	ND	ND	ND		5.0
17. CHLOROFORM	ND	ND	ND	ND	ND		50
18. FREON 113 (CCl3-CF3)	ND	ND	ND	ND	ND		20
19. CHLOROBENZENE	ND	ND	ND	ND	ND		10
20. STYRENE	ND	ND	ND	ND	ND		10
TOTAL COMPOUNDS (1-20)	ND	ND	ND	ND	ND		
METHANE (V/V-air, PPM)	ND	ND	ND	12,000	7,100		10 PPM
UNKNOWNS (#)	ND	ND	ND	(5)	ND		

COMMENTS: Results are reported with two (2) significant digits. Trace to low levels of five (5) intermediate and late eluting unknown compounds were detected in sample GZA-4.

ANALYZED BY Julie Blackwell

REVIEWED BY:

JOB DESCRIPTION: CEDC – PARCEL A – BOSTON, MA
JOB #: 12547.1
DATE SAMPLED: 7/8/91
DATE TESTED: 7/9/91

GZA GEOENVIRONMENTAL, INC.
320 NEEDHAM STREET
NEWTON UPPER FALLS, MA 02164
(617) 969-0050, x-289
LAB I.D. No.: MA092

GZA GC SCREENING FOR VOLATILE ORGANICS IN WATER
(CONCENTRATION – PPB, ug/l)

SAMPLE NAME:	Method Blank	GZA-8					METHOD DETECTION LIMIT
GZA LAB #:	06546-B	36546-A					
1. TETRACHLOROETHENE	ND	ND					10
2. TRICHLOROETHENE	ND	ND					10
3. 1,1-DICHLOROETHENE	ND	ND					10
4. TOTAL 1,2-DICHLOROETHENES	ND	ND					10
5. VINYL CHLORIDE	ND	ND					10
6. METHYLENE CHLORIDE	ND	ND					50
7. 1,1,1-TRICHLOROETHANE	ND	ND					10
8. 1,1-DICHLOROETHANE	ND	ND					10
9. 1,2-DICHLOROETHANE	ND	ND					50
10. CHLOROETHANE	ND	ND					10
11. METHYL-t-BUTYL ETHER	ND	ND					30
12. BENZENE	ND	ND					5.0
13. TOLUENE	ND	ND					5.0
14. ETHYL BENZENE	ND	ND					5.0
15. m,p-XYLENES	ND	ND					5.0
16. o-XYLENE	ND	ND					5.0
17. CHLOROFORM	ND	ND					50
18. FREON 113 (CCl3-CF3)	ND	ND					20
19. CHLOROBENZENE	ND	ND					10
20. STYRENE	ND	ND					10
TOTAL COMPOUNDS (1-20)	ND	ND					
METHANE (V/V-air, PPM)	ND	11,000					10 PPM
UNKNOWNS (#)	ND	ND					

COMMENTS: Results are reported with two (2) significant digits.

ANALYZED BY Celeste O[illegible]
for
JMB.

REVIEWED BY: A. Kalady
for EWP

WHITE COPY - Original (Accompanies Samples) YELLOW COPY - Project Manager PINK COPY - Lab Files

CHAIN-OF-CUSTODY RECORD

№ 01596

						ANALYSES REQUIRED																								
Sample I.D.	Time (24hr.)	Bailer #	Collector's Initials	Location Description	Sample Type	524.2	8240	8010	8020	8080	8270	GC Screen	PCB Screen	TCLP	TPH-IR	TPH-GC	PHC-Fing.	HNu	pH	Spec. Cond.	Filtering		HOLD		(AM DEP)				Total # of Cont.	Note #
GZA·1			MAP		H_2O							X							X	X			X						5	
GZA·2			MAP									X							X	X			X						5	
GZA·4			MAP									X							X	X			X						5	
GZA 5			MAP									X							X	X			X						5	
GZA·4,5·9A			MAP															X												
TOTAL NUMBER OF CONTAINERS																													20	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
M A Ponti Jr	7.2.91/0920	JW Cooke
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

NOTES, Preservatives, etc.:
Unless otherwise noted, all VOA vials have been preserved w/ 1:1 HCl in accordance with Mass-DEP Policy.

ANALYTICAL LABORATORY : GZA ECL
LABORATORY CONTACT : ______ PHONE : ______
GZA CONTACT : ______ EXT : ______

GZA GEOENVIRONMENTAL, INC.
ENGINEERS AND SCIENTISTS
320 Needham Street
NEWTON UPPER FALLS, MA 02164
(617) 969-0050

GZA FILE NO. 12547.1 PO. NO ______
PROJECT ACC · PARCEL A
LOCATION CHINATOWN / BOSTON, MA
COLLECTOR(S) M. A. PONTI, JR
DATE(S) OF COLLECTION 7·2·91 / 6·25·91 SHEET 1 OF 1

GZA RAPID VOLATILE ORGANIC SCREENING OF WATER SAMPLES BY THE STATIC HEADSPACE TECHNIQUE

SAMPLE PREPARATION AND ANALYTICAL METHODOLOGY

OVERVIEW

The GZA rapid screening technique for volatile organics in water estimates aqueous concentrations of these compounds from gaseous concentrations measures in air over the sample. Dissolved volatile organics are driven from the water phase by equilibrating at an elevated temperature in a hermetic system containing the sample and clean air. An aliquot of the equilibrated headspace gas is injected into the chromatograph to provide an evaluation of the quality of the water sample. This method has been developed by the GZA Environmental Chemistry Laboratory to provide rapid and cost effective screening of water samples for volatile organics. Although this technique is a modification of EPA Method 3810, it is not definitive and is not approved by the EPA for certification purposes.

METHODOLOGY

Water samples taken in the field are placed in 40 ml glass septum vials filled to capacity and capped to exclude air bubbles. Vials are preserved with 250 ul of 1:1 hydrochloric acid and samples are kept at 4 degrees C until the time of analysis. In preparing the sample for analysis, a volume ratio of 3:1 sample to headspace (air) is created by discarding 10 ml of sample (replaced by air) from the 40 ml vial or transferring 7.5 ml to a 10 ml crimp-top septum vial. The vial is resealed and heated to 40 degrees C in a thermostatically controlled bath. A 1.0 ml aliquot of headspace gas is withdrawn manually with a syringe or automatically by a Hewlett Packard 19395A headspace injector. The headspace sample is injected into the sample port of a HP 5890A gas chromatograph where the vapor is split within the injection port and distributed to two 30 meter x 530 micron fused silica capillary columns. Concentrations of eluting volatile organics are measured with dual flame ionization detectors and response data are acquired by a Nelson Analytical 760 Series intelligent interface. The chromatographic data are transmitted to an IBM AT personal computer and analyzed using the Nelson Analytical 2600 Series Chromatography Software. The information for the analytical report is entered manually onto a Lotus Symphony spreadsheet.

CALIBRATION

The response of the gas chromatograph is calibrated with external standards prepared for concentrations of 0.1, 1.0 and 10 mg/l (ppm) and introduced into the chromatograph as headspace samples in the same manner as unknown water samples. Sample peaks are identified by comparing their retention times from both columns to measures retention times of calibration standards for both columns. Qualitative comparisons are made between the two sets of test data for each sample. Sample peaks identified as known compounds are quantified according to response factors determined from calibration standards.

REPORT FORMAT

The method detection limit (MDL) for each compound is stated for every report with 95% certainty in an average chromatographic run. The method quantitation limit (MQL) is considered to be 5 times the MDL. Concentrations measured in the range of 1 to 5 times the MDL are reported as "TRACE". Concentrations less than the MDL may be identified and qualified as beneath the method detection limit (BMDL) in instances where the compound's presence is 95% certain in that particular chromatogram. The total concentration for all detected compounds for which a calibration has been made, except methane, is summarized in the row designated as "Total Compounds"; none detected, (ND) is reported if no know peaks are found. Unidentifiable peaks are reported in parentheses as the number of unknown peaks present. Compounds not detected are reported as "ND".

QUALITY CONTROL

The GZA procedure assumes that response factors are constant over the working range of 10 ppb to 10 ppm and that the precision of the analysis for samples is the same as that for the calibration standards. The 95% confidence limits for a measurement are defined as plus or minus two standard deviations as determined by a Student's t Test on replicate analyses of calibration standards. Quality control standards are analyzed daily and accepted if the relative standard deviation of the response factor is less than 20% of the anticipated value. New calibration curves are prepared when quality control limits are exceeded. Method blanks are prepared in the same manner as samples and are analyzed before each job or no less frequently than every six samples. Field blanks and trip blanks are submitted at the discretion of the sample submitter. Matrix spikes and duplicate analyses are performed at a frequency of not less than one per twenty or fewer samples and results are reported as matrix spike recoveries and percent differences. Analytical results are not blank corrected.

DISCLAIMER

Identities and concentrations of volatile organic compounds reported by this headspace screening technique are subject to limitations inherent to this method. If confirmation is desired, duplicate samples should be submitted to a State certified laboratory for analysis by the appropriate EPA protocol methods.

LABORATORY SAMPLE NOTATION:

A – Aqueous B – Blank

LABORATORY CONTACT PERSON:

Edward W. Pickering, Manager
Environmental Chemistry Laboratory
GZA GeoEnvironmental, Inc.
Massachusetts Laboratory I.D. No. MA092
Phone #: (617) 969-0050 x169

REFERENCES

Commonwealth of Massachusetts DEP, " Minimum Standards for Analytical Data for Remedial Response Actions Under M.G.L. c. 21E", Policy #WSC-89004 (1990).

Ettre, L.S., B. Kolb, and S.G. Hurt, "Techniques of Headspace Gas Chromatography," Am. Lab. 15 (10), 76--83, (1983).

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Spittler, T.M., R. Siscanaw, M. Lataille, and P.A. Parks, "Correlation Between Field GC Measurement of Volatile Organics and Laboratory Confirmation of Collected Field Samples Using GC/MS," Paper presented at 11/82 Washington, D.C. Hazardous Materials Control Research Institute Conference.

U.S. EPA, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Volume 1B, Method 3810: Headspace (1986).

Wylie, P.L., "Trace Analysis of Volatile Compounds in Water Using the HP 19395A Headspace Sampler", Hewlett-Packard Application Note AN 228-40 (1985).

Wylie, P.L., "Comparing Headspace with Purge and Trap for Analysis of Volatile Priority Pollutants", Jour. AWWA 80:8:65, (1988).

6/91/EWP-DM

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GZA GAS CHROMATOGRAPHIC SCREENING FOR VOLATILE ORGANICS IN AQUEOUS AND/OR SOLID MATRIX QUALITY CONTROL

DATE: 7/2/91

AQUEOUS

COMPOUNDS	MATRIX SPIKE RECOVERY (%)	ACCEPTANCE LIMITS (%)	DUPLICATE SPIKE PERCENT DIFFERENCE (%)	ACCEPTANCE LIMITS (%)
Trichloroethene	92.0	70–130	10.7	35
Toluene	93.0	70–130	12.2	35

SOLID

COMPOUNDS	MATRIX SPIKE RECOVERY (%)	ACCEPTANCE LIMITS (%)	DUPLICATE SPIKE PERCENT DIFFERENCE (%)	ACCEPTANCE LIMITS (%)
Trichloroethene	---	70–130	---	35
Toluene	---	70–130	---	35

APPENDIX G

TOTAL PETROLEUM HYDROCARBON ANALYTICAL RESULTS AND PROCEDURES

* * * DRAFT * * *

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS (SPECTROPHOTOMETRIC, INFRARED)

PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME: GZA LAB #:	METHOD BLANK 070391-QC	GZA-2,S-5 01827-IR
1. HYDROCARBON CONTENT	<10	69
2. PERCENT SOLID CONTENT	N/A	73
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME: GZA LAB #:	METHOD BLANK 070391-QC	GZA-2,S-13 01828-IR
1. HYDROCARBON CONTENT	<10	72
2. PERCENT SOLID CONTENT	N/A	95
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY: KWalsh

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-4,S-1
GZA LAB #:	070391-QC	01829-IR
1. HYDROCARBON CONTENT	<10	5400
2. PERCENT SOLID CONTENT	N/A	99
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-2,S-2
GZA LAB #:	070391-QC	01825-IR
1. HYDROCARBON CONTENT	<10	1000
2. PERCENT SOLID CONTENT	N/A	97
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-2,S-3
GZA LAB #:	070391-QC	01826-IR
1. HYDROCARBON CONTENT	<10	2900
2. PERCENT SOLID CONTENT	N/A	83
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY: K Walsh

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION:	ACC-PARCEL-PINE ST. BOSTON
JOB #:	12547.1
DATE SAMPLED:	6/19-29/91
DATE TESTED:	7/3/91

SAMPLE NAME: GZA LAB #:	METHOD BLANK 070391-QC	GZA-4,S-2 01830-IR
1. HYDROCARBON CONTENT	<10	1600
2. PERCENT SOLID CONTENT	N/A	93
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME: GZA LAB #:	METHOD BLANK 070391-QC	GZA-5,S-3 01831-IR
1. HYDROCARBON CONTENT	<10	18
2. PERCENT SOLID CONTENT	N/A	81
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY: KWalsh

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-7,S-2
GZA LAB #:	070391-QC	01832-IR
1. HYDROCARBON CONTENT	<10	97
2. PERCENT SOLID CONTENT	N/A	97
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-7,S-3
GZA LAB #:	070391-QC	01833-IR
1. HYDROCARBON CONTENT	<10	85
2. PERCENT SOLID CONTENT	N/A	63
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-7,S-5
GZA LAB #:	070391-QC	01834-IR
1. HYDROCARBON CONTENT	<10	25
2. PERCENT SOLID CONTENT	N/A	79
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY: KWalsh

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC-IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: ACC-PARCEL-PINE ST. BOSTON
JOB #: 12547.1
DATE SAMPLED: 6/19-29/91
DATE TESTED: 7/3/91

SAMPLE NAME:	METHOD BLANK	GZA-8,S-1
GZA LAB #:	070391-QC	01835-IR
1. HYDROCARBON CONTENT	<10	77
2. PERCENT SOLID CONTENT	N/A	94
3. MATRIX	N/A	SOIL
4. DETECTION LIMIT	10	10

COMMENTS:

ANALYZED BY: REVIEWED BY:

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EPA METHOD 418.1 PETROLEUM HYDROCARBONS
(SPECTROPHOTOMETRIC, INFRARED)
PHC–IR
CONCENTRATION (PPM, ug/g or ug/ml)

JOB DESCRIPTION: CEDC PARCEL A– CHINATOWN, BOSTON
JOB #: 12547.1
DATE SAMPLED: 7/2/91
DATE TESTED: 7/19/91

SAMPLE NAME: GZA LAB #:	METHOD BLANK 071991–QC	GZA–4 01866–IR
1. HYDROCARBON CONTENT	<1	<1
2. PERCENT SOLID CONTENT	N/A	N/A
3. MATRIX	N/A	AQUEOUS
4. DETECTION LIMIT	1	1

COMMENTS:

ANALYZED BY: L Faulkner REVIEWED BY:

WHITE COPY - Original (Accompanies Samples) YELLOW COPY - Project Manager PINK COPY - Lab Files

01596

CHAIN-OF-CUSTODY RECORD

Sample I.D.	Time (24hr.)	Bailer #	Collector's Initials	Location Description	Sample Type	ANALYSES REQUIRED 524.2	8240	8010	8020	8080	8270	GC Screen	PCB Screen	TCLP	TPH-IR	TPH-GC	PHC-Fing.	HNu	pH	Spec. Cond.	Filtering				Total # of Cont.	Note #
GZA·1			MAG		H_2O							X							X	X			X		5	
GZA 2			MAG									X							X	X			X		5	
GZA·4			MAG		↓							X							X	X			X		5	
GZA 5			MAG									X							X	X			X		5	
GZA 4,5-9A			MAG															X								
TOTAL NUMBER OF CONTAINERS																									20	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
M.A. Tomm Jr	7 2 91/0920	[illegible]

NOTES, Preservatives, etc.:
Unless otherwise noted, all VOA vials have been preserved w/ 1:1 HCl in accordance with Mass-DEP Policy.

ANALYTICAL LABORATORY : GZA CCL

LABORATORY CONTACT : ______ PHONE : ______

GZA CONTACT : ______ EXT : ______

GZA FILE NO. 12547.1 PO. NO ______

PROJECT MCC PARCEL A

LOCATION CHINATOWN/BOSTON, MA

COLLECTOR(S) M. A. Tomm, Jr

DATE(S) OF COLLEC 7-2-91/6-25-91 EET

GZA GEOENVIRONMENTAL, INC.
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(101)

EPA METHOD 418.1 PETROLEUM HYDROCARBONS, TOTAL RECOVERABLE (SPECTROPHOTOMETRIC, INFRARED)

OVERVIEW

EPA Method 418.1 is a solvent extraction/ infrared spectrophotometric method for the quantification of petroleum hydrocarbons in aqueous or solid environmental samples. Solvent extraction with 1,1,2-trichloro-1,2,2-trifluoroethane (fluorocarbon 113 or Freon 113) removes mineral oils from the individual media and the collected extract is subsequently concentrated for analysis. An aliquot of the sample is placed on the infrared spectrophotometer where the absorbance of the sample is directly compared with the standards for quantification of Total Petroleum Hydrocarbons (TPH).

METHODOLOGY

A Tekmar Model TM-250 Sonic Disruptor is used to extract the petroleum hydrocarbons from the sample matrix into Freon 113. This procedure is repeated three times upon a thirty gram representative sample. The collected extract is then elutriated on a silica gel solid phase extraction (SPE) column to remove hydrocarbon content attributable to such interferences as animal greases and vegetable oils. The purified extract is then concentrated to a known volume using a Zymark Turbovap Evaporator. Absorbance data are acquired by a Foxboro Miran 1 FF Infrared Spectrophotometer which is equipped with a fixed wavelength of 3.4 microns and a cell with a pathlength of 10 mm. The sample is placed in the 10 mm cell and the absorbance is measured and compared with the daily calibration curve to obtain TPH values.

QUALITY CONTROL

The infrared spectrophotometer is calibrated each day with the appropriate standards and blanks. The data are entered into an HP Model 11C Programmable Calculator to determine the exact equation of the calibration curve. Method blanks are prepared two ways : 1 - sonicator blank using the disruptor horn, 2 - a blank of the silica gel SPE column. These blanks check for cross contamination.

REPORT FORMAT

The method quantification limit is 10 ppm (ug/g - soil) and 1 ppm (ug/ml - water). This limit is a function of the dilution factor and detector sensitivity. The quantification limits are adjusted when dilutions are made to bring the sample response data within the calibration range of the method.

DISCLAIMER

Concentrations of petroleum hydrocarbons obtained by this solvent extraction and infrared spectrophotometric technique are subject to limitations inherent to this method. If confirmation is desired, replicate samples should be submitted for identification and enhanced quantification by PHC-Fingerprinting (GC-FID).

LABORATORY CONTACT PERSON:

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Massachusetts Laboratory I.D. No. MA092
Phone: (617) 969-0050, x169

REFERENCES

Commonwealth of Massachusetts DEP, "Minimum Standards for Analytical Data for Remedial Response Actions Under M.G.L. c. 21E", Policy #WSC-89-004 (1990).

Standard Methods "For the Examination of Water and Wastewater", Seventeenth Edition, Part 5000, 5520F Hydrocarbons, (1989) 5-47 to 5-48.

U.S. EPA "Handbook for Analytical Quality Control in Water and Waste Water Laboratories", EP-600/4-79-019 (1979).

U.S. EPA "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, Chap. 400, Method 418.1, Petroleum Hydrocarbons, Total Recoverable, (1979).

U.S. EPA "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Volume 1B, Method 3550: Sonication Extraction, Method 3630: Silica Gel Clean Up. (1986).

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